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ORIGINAL ARTICLES.

HOW CAN SUPPURATION BE BEST PREVENTED IN ACUTE PELVIC INFLAMMATIONS?[1]

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I SHALL not treat of those forms of pelvic inflammation which arise from disease of the pelvic bones, from bowel disease, or from other causes which are operative in men as well as women; but shall confine myself strictly to those inflammatory conditions which arise from causes extending through the uterus.

In the earlier application of laparotomy to the treatment of inflammatory diseases of the uterine adnexa, conditions were met with which could only be treated by removal of the affected parts. The subjective symptoms were of the most distressing nature, and examination demonstrated an extensive involvement of the pelvic peritoneum, together with ovarian and Fallopian disease. Having obtained marked success in removing the grosser evidences of chronic pelvic inflammation, as pyosalpinx, hydrosalpinx, etc., we began to apply the radical operation of laparotomy to the treatment of the more acute forms of tubo-ovarian disease. Just here we made a mistake.

I had met with a number of cases of gonorrheal infection of the uterus and tubes in which nature apparently affected a cure; certainly, disagreeable symptoms disappeared, and examination showed no marked pelvic lesions. Applying to a consideration of these inflammations observation made in the study of the extension of infection in other parts of the body I began to seek for some means to assist in the cure of these cases. The idea struck me that I might here apply the surgical rule that stopping the supply of infectious material conduces to a cure of its complication and prevention of extension; and in 1891 I began to curette the uterus for acute salpingitis and peritonitis. The results obtained were startling. A riper experience and more careful observation of my cases have led me to expect a cure (or rather, to retain the idea of my paper, to prevent suppuration) from curettage, irrigation, and the use of antisepsic dressings in one class of cases only, namely, those cases of first infection when seen within a week after extension of the infection outside the uterus. This operation, the advocacy of which brought so much unpleasant criticism upon me, is now the accepted routine procedure in most of our general hospitals.

I have applied it in nearly a hundred cases of acute first attacks and have never seen failure result from it when early applied. If we secure good results from this treatment, where an infection has already extended to the tubes and pelvic peritoneum, it may be presumed that the curettage is indicated whenever the endometrium is infected. My experience has taught me that such is the case. The causes of failure in the hands of others I have traced to the use of strong antiseptics within the uterine cavity, partial removal of *débris*, and incomplete packing of the uterus.

The observation and experience of six years with conservative curettage have taught me to surely expect a complete recovery in cases of acute endometritis with salpingitis and peritonitis when seen early in first attacks.

I do not divide the cases according to the infection, whether septic or specific, but treat all pyogenic infections alike. But there are many cases which are seen late; there are other cases which present an acute process implanted upon a chronic, cases of chronic relapsing salpingitis; and still other cases which have been cured entirely, so far as we can see, by operation years before, but have become reinfected. Although these cases are certainly most acute, it must not be forgotten that previous attacks of tubal and peritonitic inflammation have markedly changed the nutrition of the affected organs.

Suppuration *may* not ensue, but it is likely to. Curettage helps all these cases somewhat, but so many failures to afford entire relief result where curettage alone is employed that more must be done. Henrotin, Chicago, has written very ably upon this subject, and credit for the idea is due him. For two years, in all such cases, I have operated as follows: The uterus is thoroughly curetted and irrigated. All instruments being changed, in a few minutes, the cul-de-sac is opened and a wide blunt dissection made in the vagina

[1] Read by title at the Twelfth Annual Meeting of the Fifth District Branch of New York State Medical Association, held in Brooklyn on May 26, 1896.

and cul-de-sac by separating two fingers. The fimbriated ends of the tubes are opened if found closed. All serous-fluid accumulations are evacuated, and the pelvis wiped dry. No irrigation is here used. I then pack from three to five yards of iodoform gauze into the pelvis, each strip being about three inches wide. The uterus is next tightly packed as is also the vagina. A self-retaining catheter is introduced. On the third day the vaginal gauze is removed, together with that in the uterus. The vaginal gauze is renewed but the uterine packing is not, unless the uterus be large. The gauze in the pelvis comes out in a week or ten days under chloroform and another large pelvic packing is made.

The results of this operation are most gratifying. The lymph which is thrown about the antiseptic dressing disappears in a few months and the uterus becomes perfectly movable. Accidents have never happened to me and I have so far been uniformly successful in preventing suppuration. In several of these cases of relapsing salpingitis I have met with large hydrosalpinx and broad ligament cysts. These were merely incised and evacuated.

So much has of late years been written upon hysterectomy in inflammatory cases that the profession at large has come to believe pretty generally that we gynecologists have nothing else to offer a woman who has pelvic peritonitis other than some mutilating operation. These two operations, one matured, the other new but sufficiently tried, will very effectually prevent suppuration in the pelvis when properly applied. All the criticism which has been put upon the operation of hysterectomy is not merited, but most of it is. He who first sees these cases of pelvic inflammation, folds his hands, orders opium and poultices, and lets the infection run riot in the woman's pelvis, is the man to blame. I consider it an imperative duty to treat pyogenic infection here by surgical means only. Laparotomy is no longer warranted, unless there be pus present, for peritonitis of a distinctly pelvic character. We have in these two operations the means to prevent the wholesale mutilations which we see advertised on every college and hospital bulletin board. But we must get our cases early. The responsibility resting upon the family physician is great. I state it as mildly as I can when I say that the greatest nonsense ever receiving the support of intelligent men was Alonzo Clark's treatment of peritonitis by opium. Pelvic inflammation is due to an invasion from without. One very common result of such infection is production of pus. Nowhere else in the body will the surgeon adopt the stasis plan of treatment of an infection. Incision into the cul-de-sac immediately relieves these women of pain. Very often within twelve hours the bed is soaked with serum, so great is the drainage. The breaking up of adherent lymph-plates opens the mouths of the infection-laden lymph-streams and they pour all their contents into the gauze. These operations take the place of opium and poultices; they do not, by locking up the emunctories, foster infection, but stop it short. I feel that I have something between the poultice or ice-bag and the horrible hysterectomy. I believe I can nearly always prevent suppuration.

I cannot too strongly urge you to apply to the acutely inflamed pelvis of a woman those general surgical principles which are embodied in the two procedures of (*a*) cutting off the primary source of an infection, and (*b*) draining away its results. This is the truest conservatism, for it seeks the conservation of tissue diseased and, at the same time, protects the general economy against the results of diseased processes. Above all, it leaves the woman her menstrual function. These women are symptomatically and physiologically cured, for they bear babies afterward.

In reviewing my experience of the last sixteen years, I believe I can at last see my way to prevent the formation of pus where the tubes and peritoneum are involved; and I feel much gratified upon being able to present these operations to you. For many months, week after week, I have shown these operations to the practitioners who honor me with their presence at my lectures. I have hammered at them with the irresistible arguments, demonstration and result. From among the seven or eight hundred who have gone out, some have tried the cul-de-sac opening where before they used opium. Their letters are indorsement enough. I shall be more than repaid if I can make among you a few converts.

DISCUSSION.

Dr. James H. Etheridge of Chicago, considers that Pryor's operation, as this surgical operation will be designated in the future, has come to stay. It offers the only solution of a most serious gynecological problem. When a woman is infected with gonococci she is almost certain to develop a specific perimetritis before she is freed from this loathsome malady, with its resultant sufferings, adhesions, tubal and ovarian distortions, and hopeless sterility. Thousands of young men acquire gonorrhea, and before marrying their innocent

sweethearts find it agreeable to their convictions of propriety to get rid of the disgraceful disease, as they think they can easily do. Within a few weeks after marriage the poor wives acquire urethritis, cystitis, vaginitis, endometritis, salpingitis, perimetritis, sterility, and broken hearts. The part that has been played by the medical profession has been almost complete inanity in the presence of the wickedly energetic, aggressive gonococcus, whose onward march has not been interrupted one moment. His ravages are checked only when nature throws out a wall of protecting lymph beyond his line of march well up in the pelvis, by which he is permanently picketed from future destructive conquests and compelled to lay down his arms and perish from starvation, after having wrecked the poor woman's life for an indefinite period of time.

Dr. Pryor has exhibited great wisdom in studying carefully the habits of the gonococcus and in presenting to the medical profession a simple, safe, and efficient method of circumventing its method of warfare on helpless women. He goes in above and beyond the progress of this microörganism, and completely and effectively cures this disease in woman for the first time in the history of medicine. Thousands of women who have had gonorrhea are alleged to be cured, but gynecological operators who, later, remove a pyosalpinx from one or both sides, know that they were *not* cured at all. I firmly believe that we rarely *cure* a gonorrhea in women by any of the recommended lines of treatment to-day. Having run the entire gamut of such lines of treatment and found them all sadly deficient in effectiveness, I can but welcome Dr. Pryor's brilliant conception with warmest plaudits, and assure him that he is the author of a means of saving many a woman's life from suffering and a wrecked future.

SERIOUS HEART LESIONS WITHOUT WELL-MARKED CONTINUOUS PHYSICAL SIGNS.

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THE clinician who depends entirely upon continuous physical signs for the recognition of all cardiac lesions will be likely to overlook numerous cases in which a thorough appreciation and interpretation of subjective symptoms, with occasional and transitory objective manifestations, would lead to a correct conclusion.

There are conditions more important in cardiac diagnosis than the simple recognition of incompetent and stenosed valves, though many of our text-books have not succeeded in making that fact clear to the profession. Experience has demonstrated the great importance to the diagnostician of understanding the true condition of the heart-muscle and of determining with equal accuracy the degree of functional activity.

The progress made during the past few years in the treatment of heart disorders, by methods in which we are particularly interested, has caused me to bring to your notice to-day the subject of "Serious Heart Lesions Without Well-Marked Continuous Physical Signs."

I shall rehearse fully the history of a typical case and confine myself to deductions which seem to me justified after clinical observation and pathological examination of others:

G. S., of Auburn, N. Y., aged forty-six, merchant, consulted me September 16, 1891. He was well-built, well-nourished, with an unusually good muscular development, and a man of exemplary habits. He used tobacco moderately. His family history was negative. He had never been treated for constitutional syphilis, though, when a young man eighteen years of age, he said that he had a little ulcer on his penis, which healed very readily in a few weeks, after which his attending physician told him that further treatment was unnecessary. Though constitutional symptoms had never been noticed, in the light of his subsequent history I have always suspected very strongly that he had syphilis, and treated him in accordance with such suspicion. In 1888 he had a slight attack of muscular rheumatism, for which he went to Mt. Clements, where he rested a few weeks, took the baths, and returned home cured. During the eight years preceding his visit to me, he had been considerably annoyed by a sense of discomfort after eating, in the region of the heart, which followed all hearty meals. This uncomfortable sensation was later accompanied by an occasional shortness of breath, or, as he expressed himself, "superficial and unsatisfactory breathing." If he walked to his place of business after eating, a distance of one-half mile, he had noticed also that his breathing became worse —more labored—and that there was more or less numbness of the left arm, forearm and hand, while his left shoulder became painful until he rested for a few moments, when the pain and numbness completely disappeared. Later actual pain was substituted for the left-sided numbness, and at one time before I saw him he suddenly, after a moderate dinner, while walking to his store, was suddenly seized with symptoms of alarming angina. During this attack his physician, Dr. Cheesman of Auburn was called, who immediately recognized the fact that the patient was suffering from serious disease, though, on physical examination, nothing abnormal could be found. When, on September 16, 1891, Mr. S. consulted me, his appearance was that of a perfectly healthy

man. His only complaint was of the discomfort after eating and the increase of numbness and pain in the left arm during the preceding month, with an increasing sense of weight, causing a feeling of constriction in the upper thoracic regions. His breathing was becoming more and more labored whenever he made the attempt to walk after eating. His friends noticed a growing pallor during the continuance of the dyspnea and pain; at other times his color was good. As time went on, his breathing occasionally became slightly uncomfortable; if he did not walk after eating, this was not associated with numbness or pain in the left arm.

No amount of walking or exercise when the stomach was empty at this time gave rise to dyspnea or symptoms of angina. There was no headache, nor were there eye-symptoms, edema of the extremities, or puffiness of the face. There were no nervous symptoms; the patient slept well, his appetite was good, and his bowels regular. He passed the normal quantity of urine, and during my observation of him repeated examinations of it gave negative results. The anginous attacks were not followed by polyuria. Ophthalmoscopic examination was negative. Reflexes were normal. No hysterical symptoms.

Physical examination on September 16, 1891: Aside from a slight gastrectasia, there were no abnormalities present. A careful examination of the heart showed its outlines to be normal; the heart-sounds were everywhere clear and distinct. There was no broadened area of aortic dulness. The pulse was 70, of good character, with arteries of normal resistance and tone.

Directing the patient to walk uphill for ten minutes and to return for reëxamination, I found no change in the cardiac outlines; the pulse became more accelerated—90 and feeble—while the heart-sounds were less distinct than before; the aortic sounds seemed distant, indistinct, or embryonic, as Nothnagel has characterized them. There was no arhythmia, no complaint of fatigue or dyspnea. As a result of this examination and a consideration of the previous history, I diagnosed myocardial degeneration, in all probability segmentary, of specific origin, and due to arteritis involving the coronaries or their branches.

In the course of a few weeks I had abundant opportunity to observe the patient after hearty meals and to make careful physical examinations of the heart. During this time the symptoms were in no degree relieved by treatment. It was found that from the first of October to the fifteenth the left ventricle was dilated and reached 1 cm. beyond the mammary line to the left; no murmur could be detected. At times the pulse showed marked arhythmia, and the aortic sounds were distant and indistinct. Urine continued normal. Anginous symptoms were increasing on exertion, until it was determined to prescribe absolute rest for a short period in bed. After the rest, on the 6th of November, 1891, the dilatation had disappeared; heart-sounds were distinct and clear. He had no annoying symptoms during the period of his rest, however heartily he ate, and for a short time he considered himself much improved.

He soon gave attention to some of the details of his business and at once experienced a return of his annoying symptoms on exercise after eating. It became evident that any considerable and continuous business worry or exertion of any kind was associated with an increase of symptoms, and these, in turn, with an increased area of cardiac dulness or dilatation. The dyspnea and the pain in the left arm increased. About the middle of November these symptoms appeared independently of the taking of food. We then went to New York and consulted two of the leading diagnosticians of the metropolis, both of whom agreed that the disease was in all probability due to coronary disease and myocardial degeneration. A grave prognosis was given.

He decided to consult two other physicians during his stay in New York. He remained with the first of these consultants three or four weeks, after receiving the positive assurance that he had pseudo-angina, and that there was nothing organically wrong with the heart or its arteries. During this time he was treated dietetically and hydrotherapeutically. Having obtained no relief and lost forty pounds, he consulted another authority, who, after a minute examination, expressed the opinion that he had never seen angina pectoris due to coronary disease associated with myocardial degeneration in a man as young as the patient, and concluded that he had simple dilatation of the stomach, with pseudo-angina. Resorcin, bismuth, and cascara were prescribed, and the patient was sent home, to return to New York in three weeks, when it was confidently expected that he would be much relieved.

About one week later, on the 28th of March, 1892, I was hurriedly summoned to his bedside, where I met Dr. Cheesman, who told me of an alarming attack of angina pectoris, which he had had on the preceding Tuesday. We found the patient with an almost imperceptible arhythmic pulse, 120 per minute, at times more rapid, the cavities of the heart dilated in all directions, the aortic sounds imperceptible, the remaining heart-sounds embryonic and indistinct. There were no murmurs. His extremities were cold, his face was ashen-colored, lips were blue, he was anxious, and seemed to be *in extremis*. Urine was scanty—non-albuminous. He had no pain in the left arm during this attack. It did not seem to Dr. Cheesman or myself that the patient could rally from this condition, but on the following day, I believe, he went out for a ride. On the 5th of April, eight days after my visit, he had a similar attack, in which he died.

I have gone thus fully into the history of this case because of the transitory character of the physical signs (always disappearing after prolonged

rest), the unusually long period of discomfort associated with stomach symptoms following the ingestion of food, preceding the first alarming attack, and the great variety of opinions which had been given by those who were consulted. We were unfortunate in not being able to obtain a *post-mortem*. From *post-mortem* examination in similar cases, there can be little argument against the assumption that there was involvement of the coronary arteries and the heart-muscle.

One of the consultants held that angina pectoris is not likely to occur until long after middle life, and that specific arteritis was out of the question, because of the failure of all antisyphilitic treatment to influence in any way the course of the disease. While it is true that angina pectoris and myocarditis are conditions found in advanced life, it cannot be denied that these diseases, with their underlying obliterating arteritis, may exist during middle life, and clinicians have repeatedly established the truth of this assertion. The majority of such cases are, I believe, of syphilitic origin or hereditary. Our clinical experiences repeatedly show young men with arteries practically old and degenerated.

Oestreich[1] reports a case in which a young man, thirty-two years of age, who had previously enjoyed perfect health, died on the night of his wedding, with all of the symptoms of obstructed circulation and cardiac insufficiency, without symptoms of angina pectoris. The *post-mortem* showed beginning fibrosis of the ascending aorta. Upon an uneven and ulcerated sclerotic spot was found a thrombus, which closed the opening of the right coronary artery, and from the side of this thrombus a prolongation had become detached, which plugged the left coronary.

Porter[2] has shown that complete mechanical closure of the coronary arteries of dogs is always speedily followed by complete arrest of the heart-beat. This is attributed to anemia, which, in its development, must be followed ultimately by profound myocardial change.

The transitory dilatation of the ventricles it has been my experience to note in other cases, in which the dilatation followed strain in a heart already the seat of fragmentation or segmentary myocardial degeneration. In some of these there was an associated valvular lesion; in others, arterial disease. Recession of the dilatation followed rest and rational treatment. Auriculo-ventricular murmurs are occasionally heard during the period of extreme dilatation; as this disappears murmurs are much modified. Systole is stronger and compensatory changes are plainly manifest.

The persistence during so many years of the direct association of anginous symptoms with the ingestion of food and the accompanying distention of the stomach were misleading (though frequently encountered in this class of cases), and seemed to many to justify the diagnosis of pseudo-angina. This condition is rare, and such a diagnosis ought never to be made until all possibility of the existence of true angina with its positive pathogenic factor has been excluded.

Cases of alcoholic myocarditis[3] are common, but are not often recognized in their incipiency. The disease makes gradual progress, but often during the early stage a slightly increased area of cardiac dulness is found, with, as a rule, clear and normal heart-sounds and occasional arhythmia. Only rarely do we hear a faint systolic murmur. We not infrequently find these patients coming to the clinic or to the hospital with dyspnea, slight edema of the ankles, and other evidences of stasis. After a period of rest, with appropriate treatment, the symptoms of weak heart disappear, and it returns to its normal size. The successful treatment of these cases must necessarily include total abstinence from all spirits. We see fewer of these cases in this country than are found in Munich and other cities on the continent where beer is excessively used, but I have learned to recognize a variety of alcoholic myocarditis, the clinical picture of which answers very closely to that described by Bollinger[4] and others. These patients offer little resistance to acute infection, and in most cases readily succumb, especially to pneumonia and other acute respiratory diseases.

During the past few years my attention has been called to both permanent and transitory dilatation and hypertrophy of the heart following severe strain, undue muscular exertion and prolonged worry. In the majority of these cases I think the history will prove that the heart was not normal before the strain. This has been established in all of my cases in which the dilatation and hypertrophy continued permanently, unless the strain was continuous and and the patient had labored under it for a considerable period. See[5] and Rieder,[6] in support of this position, make the observation that in France the country letter-carriers who walk all day suffer no ill effects from their long-continued and, at times, laborious marches, probably because the normal heart, like other muscles, accommodates itself to the work. Rieder (*loc. cit.*) asserts that with a healthy condition of the heart it is exceptional and exceedingly rare to find cardiac insufficiency and dilatation with consecutive hypertrophy following severe bodily

exercise. Spillman,[7] Bernheim,[8] and Thurn[9] make the more positive statement that the normal heart never tires; that in those who are perfectly healthy, in spite of exhausting effort, there is no typical cardiac insufficiency.

Prolonged muscular exertion and consequent strain is, in all probability, an important predisposing factor in the causation of degenerative heart and arterial disease, and if those cases in which there are but occasional or transitory physical signs to lead us, are subjected to such insult, the symptoms soon become continuous and characteristic of myocardial fragmentation.[10]

In the first class of cases to which I wish to call your attention, for days at a time there exist with dilatation marked arhythmia, tachycardia, and alarming intermission of the pulse, with delirium cordis, dyspnea, and all of the other evidences of an organ ready to surrender with secondary involvement of lung and kidney. After persistent effort there has for a time, at least, been a return to apparent health, the heart acting normally, but little dilatation remaining. Some of these cases I have followed for many years and have battled vigorously against repeated attacks.

In the second class of cases we have, for a limited period, symptoms of failing heart-strength, as shown by increasing dyspnea on exertion. There are no cardiac murmurs in most of these cases, but persistent dilatation, with little or no hypertrophy. The pulse remains regular almost to the end, though there is marked tachycardia. The heart shows no tendency to mend. Sudden death follows, as a rule, after the acute symptoms have persisted for a few days or weeks. As the symptoms grow more alarming, we have all the evidences of portal and renal stasis. In these cases there is no preëxisting emphysema. In both varieties there was found marked myocardial change on macroscopic, and more particularly on microscopic examination.

We had, in our pathological examination, given but little study to the appearance of the auricles, the ventricles having received most of our attention. Arhythmia was considered a necessary symptom of fibroid or degenerated heart. Hampeln[11] proved that a regular pulse need not exclude the existence of advanced myocarditis. During the past two years I have seen two cases in which I had opportunity to observe the patients to the end. The first was a man, whom I left with a regular pulse, without a sign of impending danger, ten minutes before his death. The *post-mortem* revealed a thin ventricle, with partial rupture; the microscope gave evidence of advanced ventricular fibroid degeneration. The second case was one of complete rupture, with preceding transitory physical signs, in which there were microscopic evidences of degenerated ventricular walls and advanced coronary disease. The painstaking observations of Radasewsky[12] upon cases of ventricular disease, to which I have found but one American writer[13] refer, make a more exact localization of the lesion in the heart possible during the life of the patient. It must be accepted that Romberg and Krehl[14] were correct in their assumption that automatic and rhythmic action of the heart takes its origin in the muscular fibers, and not in the cardiac ganglia, and that the starting-point of the primary impulse to contraction is in the walls of the auricles, near the opening of the large veins.

Radasewsky's (*loc. cit.*) conclusions seem to prove that the marked irregularity of the heart in chronic myocarditis is due to a localized involvement of the auricles, and cannot be explained by changes found in the ventricles. Thus, the localization and the extent of tissue-change is made possible by a consideration of the character of the pulse and the behavior of the heart-muscle. The degeneration of the ventricles usually associated, as I have remarked, with a regular, but, as the process advances, an increasingly feeble pulse, gives a most unfavorable prognosis, because of the greater strain to which these are subjected.

The changed heart-muscle ofttimes presents a complication entirely independent of the accompanying valvular lesion.[15] We are then likely to have the clinical evidences of heart-fatigue with either diseased coronaries, connective-tissue overgrowth, or parenchymatous changes.

The most recent investigations,[16] bearing upon the anatomical causes of changed and faulty compensation in valvular lesions prove the direct association of these insufficiencies with changes in the heart-muscle consequent upon lesions in the coronary vessels. In those cases in which the valvular diseases of the aorta are due to fibrosis—and the majority of these are—it has been found that the branches of the coronaries, as well as the aorta itself, are the seat of periarteritis and endarteritis. In consequence of these changes, we find circumscribed degeneration of the muscular structure of the heart, even necrosis and ultimate foci of new cicatricial tissue.

With mitral lesions, which are more likely to be of inflammatory origin, the starting-point of the retrograde process is in the coronary veins. The right ventricle is unable to hypertrophy sufficiently, and its muscle is weak, without resistance. There

is obstruction, not only in the venæ cavæ in these cases, but the coronary veins are equally involved in the process; these are dilated, with thickened walls. Banti's (*loc. cit.*) suggestions are rational, and, in the light of anatomical observation and clinical experiences, justify us in considering that with faulty compensation and aortic lesions there is an "arterial," with mitral lesions, a "venous cirrhosis" of the heart. Increasing arhythmia, reduced heart-strength, and progressive ventricular dilatation are accompanied with more audible evidences of auriculo-ventricular incompetence and all of the ordinary symptoms of marked faulty compensation. This alarming condition can, in many cases, be postponed, though it cannot be indefinitely averted, by an appreciation of the existing complication. With valvular lesions, the first and slightest increase of dyspnea, associated with either persistent or transitory arhythmia, the slightest increase of physical signs after exertion, and with these symptoms an increasing area of cardiac dulness, whether permanent or transitory, must lead to the conclusion that the myocardium is becoming insufficient, undergoing, in all probability, degenerative or inflammatory change, requiring rest and active treatment.

When valvular lesions are associated with acute infectious processes, it is not at all uncommon to find clinical and pathological evidences of acute exacerbations of chronic myocarditis; indeed, in some of these cases the evidences of the acute disease of the heart-muscle overshadow entirely those of the valvular lesion.

Stokes,[17] in 1855, held that whatever the cardiac affection, the symptoms depend mainly upon the strength or weakness, the irritability or paralysis, the normal or abnormal condition of the heart-muscle.

Attention must be directed to the variability of the physical signs referable to the heart in many forms of anemia, either due to constitutional disturbances or local asphyxia from coronary disease, and the rapid disappearance of these under favorable environment and treatment.

The history of the cases of paroxysmal tachycardia in which the tachycardia is not a symptom, but is supposed to be an essential disease[18–20] is peculiar. There are sudden attacks of rapid heart-action with a small, thready, easily compressed pulse, and no previous history or physical signs of heart-disease. I have seen patients in these attacks with the pulse reaching far beyond two hundred per minute, at the same time found it regular, with diffuse, but feeble cardiac impulse, and ultimately, after repeated attacks, there was increase of cardiac dulness, due to dilatation, which disappeared with the disappearance of the symptoms.[19]

Dilatation is not a necessary accompaniment of paroxysmal tachycardia,[19] and when it follows is of secondary origin. Bouveret[20] mentions cases without dilatation, while Fritz[22] observed two patients during a period of three years before it occurred. Quincke and Hochhans[23] have had similar experiences. These cases of paroxysmal tachycardia must not be confounded with hysterical palpitation.

Finally, it may be positively asserted that murmurs have been heard occasionally when no organic change was found after death. It can be as confidently stated that organic change was often present when no murmur was audible. Such a case I recently saw, in which there was ulcerative endocarditis. Murmurs disappear for a time, as Fothergill[24] says, "in a perplexing manner." The aortic regurgitant, even, has been absent for distinct periods.[25] Mitral regurgitant murmurs have vanished in cases where the dilated left ventricle has been relieved, and the curtains of the valve consequently become sufficient to close the ostium.

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A BRIEF CONSIDERATION OF PSYCHICAL EPILEPSY.[1]

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EPILEPSY still defies the pathologist and baffles the clinician. Although studied and treated since the time of Galen, yet in these days of exact histological knowledge and specialized therapeusis no palpable lesion is discoverable to which the epileptic neurosis is due, and no treatment is known which can be called curative. It still claims as its victims two out of every one thousand persons.[2]

The definition of epilepsy has felt the influence of evolution. It is no longer simply the "falling sickness." Scientific observation has caused a considerable modification of the easy dictum of quaint William Buchan,[3] who wrote, seventy-five years ago, "the epilepsy is a sudden deprivation of all the senses, wherein the patient falls suddenly down, and is affected with violent convulsive motions." Nor does Hughling-Jackson's latter-day definition[4] prove altogether satisfying, namely: "A sudden, rapid, occasional, and local discharge of cerebral cortex."

The theory of arterial spasm, causing local cerebral anemia, is plausible, and, if we accept it, an explanation of the syndrome of any form of epilepsy is easily elaborated. Spitzka,[5] claiming that arterial spasm accompanies the fit, defines epilepsy as "a diseased state of the encephalon, without a palpable characteristic lesion, manifesting itself in explosive activity of an unduly irritable vasomotor center, leading to complete or partial loss of consciousness, which may be preceded or followed by various phenomena, expressing the undue preponderance of some, and the suspended inhibitory influence of other cerebral districts."

Nothnagel[6] places the convulsion-center between the lower portion of the pons and the upper portion of the oblongata. He has shown that epileptiform convulsions with automatism are produced by a slight puncture at this point. If we prolong sensory irritation of a given spinal nucleus after reflex movements have taken place, the subsequent reaction (if there is any reaction beyond the plane of the segment in which the given nucleus is situated) will be in the oblongata in the form of laughing, crying, deglutition, and spasms. Irritation of certain parts of the cerebral cortex causes active anemia of certain parts of the brain, independently of the condition of the rest of the body,[1] for the cortex has the capacity of acting as a vasomotor center for the blood-vessels of the brain. A complemental hyperemia of other parts of the brain ensues, the convulsion-center is overwhelmed with the increased blood-supply, and functional excess results in the form of convulsions. The afflux of blood into special parts of the brain, through unaffected arteries, results in exalted function of the well-nourished areas. Hence the auræ, varying with the area: odors, colors, tinnitus, etc.

In *petit mal* the thalamus ganglia are probably undisturbed, and the initial arterial spasm is confined to the surface of the hemispheres. Transitory unconsciousness or abolition of cortical function occurs, without further disturbance of the patient, as his automatic ganglia carry on their functions. The less the arterial spasms the less the fall of manometrical pressure within the cranial cavity, and the less the complementary hyperemia of the lower centers. Such is the theory of arterial spasm advanced by Kussmaul and Tenner, and accepted by some neurologists.

Gowers[2] rejects the theory of arterial spasms. He refers to the fact that the experiments of Ferrier, Luciani, Bartholow, and Horseley teach that irritation of the cortex may cause convulsions. He concludes from the study of auræ that the cortex of the cerebral hemispheres is the seat of primary discharge. A case of his own and a similar case of Oebeke's confirm this view, for in each of these cases a lesion in the internal capsule occurred in an epileptic. After this accident the fits, previously general, almost ceased on the paralyzed side. The inference must be that the discharge causing the general convulsions occurred above the internal capsule, namely, in the cortex. It is unnecessary that there should be any primary change in the energy-producing action of the cortical cells; there is simply, according to this view, an instability of resistance in the cells. Gowers considers epilepsy, therefore, as a disease of the gray matter of the brain, most frequently of the cortex, which results in an impairment of the resistance of the nerve-cells to the liberation of energy. A sudden and violent liberation of nerve-force results in derangement

[1] Read at a meeting of Neurological Section, Academy of Medicine, New York, May 22, 1896.
[2] Starr, "Familiar Forms of Nervous Disease." New York, 1890, p. 252.
[3] "Domestic Medicine," London, 1821, p. 272.
[4] *West Riding Asylum Reports*, vol. iii, p. 331.
[5] *Medical Standard*, vol. i, p. 5.
[6] Meynert, "Psychiatry," Sachs' trans., 1885, p. 212.

[1] Meynert, op. cit., p. 249.
[2] "Dis. of the Nervous System," vol. ii, London, 1881, p. 753 and ff.

of function and impairs the integrity of the complex state called consciousness.

Whatever may be their differences of opinion regarding the occurrence of arterial spasm during an epileptic attack, neurologists agree that there are intimate and intricate relations between epilepsy and insanity. Of the mental manifestations arising from epilepsy, perhaps the most interesting is the psychical disturbance. In 1850 Morel[1] gave the name *epilepsie larvée*, or masked epilepsy, to attacks of the disease in which there were psychical manifestations. Esquirol followed him in the usage of the term, as also Legrand du Saulle.[2] The latter, in 1877, reported two cases under this name, both of which were cases of double consciousness. In the first of his cases the mental alienation lasted from several hours, in some attacks, to three days in others, during which time the patient traveled long distances, often regaining consciousness in a prison or on a railway train, when he found himself in possession of several articles he had unconsciously stolen. In du Saulle's second case the patient, whose periods of automatism lasted from twenty-four to forty-eight hours, murdered a peaceable old man, a stranger, during one of his attacks.

Among the few cases of psychical epilepsy reported have been included cases of imperfect consciousness, expansive delusions, dreamy states, intervallary insanity, and, in short, all psychical disturbances preceding, replacing, or succeeding convulsions. Should not the term psychical epilepsy be limited to cases in which the epileptic psychic equivalent replaces the epileptic attack of *grand* or *petit mal*, excluding double consciousness? It would simplify the matter if the term were confined to those cases in which a maniacal outburst follows the usual preparoxysmal stage. After a period of despondency, irritability, restlessness, dread, giddiness, or, in some patients, intense elation, in others an exhibition of voracious appetite, instead of a fit the patient experiences a sudden attack of laughing, weeping, or shouting, with extravagant gesture and maniacal appearance, and even in some examples with uncontrollable homicidal impulse devoid of motive.

An argument against the inclusion of all cases of double consciousness, under the title psychical epilepsy, is that this condition, while most frequent among epileptics, occurs also in alcoholic patients and in cases of melancholic frenzy.

Gowers[3] applies the term masked epilepsy, or *epilepsia larvata*, to a condition succeeding a minor attack of epilepsy, in which there are random remarks made and automatic acts performed by the dazed and stupid patient. Imperfect loss of consciousness with automatic action, he remarks, constitutes the minor seizures in some cases without any initial epileptic stage.

Brief notes on two of my cases will suffice to illustrate psychical manifestations in cases of *petit mal*. These are not pure psychical epilepsies.

H. S., an unmarried clergyman under my care, of German parentage and aged twenty-seven, had his first epileptic attack at the age of twenty-four, which he attributed to overstudy, anxiety, and loss of sleep preceding an examination. For several weeks he prevented drowsiness while studying at night by sitting with his feet in cold water. His father was an epileptic. After a minor seizure, during which he stares wildly about and chews convulsively, he walks about, eats, prays, or preaches coherently for about fifteen minutes. During this amnesic period he can carry on conversation, recognizing the members of his family and calling them by their names. All his attacks have been similar and have appeared at intervals of about a week.

A. S., a bookkeeper, aged thirty, married, born in Germany, came under my care after having experienced for at least six months conditions of reduced consciousness occurring every two or three weeks. During his mental alienation, which probably follows an attack of *petit mal*, he wanders off for a week or less, walking about the streets, entering shops and saloons, conducting himself properly, but in an amnesic condition. He has nocturnal attacks, with cry, but accurate testimony regarding them could not be elicited. He has frequent headaches, is irritable and indolent, and his memory is impaired. His pupils are unequally dilated and respond but slightly to light. He is myopic.

Performances of a psychic character following an attack of *grand* or *petit mal* are not psychic equivalents, and should be called post-paroxysmal psychical manifestations. They are due to mental disturbance, but occur as a result of other causes than epilepsy in certain cases.

Spitzka[1] declares that double or alternating consciousness appears to be limited to the mental disturbances of menstruation and to periodical insanity. He also alludes to its occurrence in primary confusional insanity.

An acquaintance of the writer, a scientist of ability and reputation, occasionally rises from his bed at night and, in a condition of partial but amnesic consciousness, writes upon subjects connected with his work. The results are accurate and valuable, and he knows of the occurrences

[1] "Traité des maladies mentales," Paris, 1860, p. 480.
[2] "Étude medico-légale sur les épileptiques," Paris, 1877.
[3] "Dis. of the Nervous System," vol. ii, London, 1881, p. 746.

[1] Manual of Insanity," New York, 1887, p. 59.

during his double consciousness only by finding the manuscript on his table in the morning. He is not an epileptic.

Kiernan[1] says: "Unconsciousness is not a proof of epilepsy, nor does a conscious psychosis disprove the epileptic nature of the subject in whom it occurs. All psychoses may occur in epileptics, and be tinged by the coexisting epileptic state. These, however, are not true epileptic psychoses, and need not necessarily present their characteristics."

As examples of the class of cases to which it seems desirable to limit the term psychical epilepsy, I add brief notes of two cases occurring in the practice of Professor M. Allen Starr, who has put their histories at my disposal. A report of the first case has been published.[2]

S. F., aged twenty-one, is the son of healthy and intelligent parents, with a personal and family history free from any rheumatic or syphilitic taint or alcoholic habit. Up to his fifth year he was a bright and healthy child. He then received a severe fall on his head, followed by unconsciousness for twelve hours. Since that accident he never completely regained his mental balance, and has suffered from pain on the left side of his head. He seemed fairly bright at his lessons, and was willing to study, but was very easily excited and accustomed to give way without adequate cause to emotional impulses, either of joy or anger. When sixteen years of age he received a second fall on his head, followed again by unconsciousness for several hours. Since the second accident all his symptoms have been decidedly aggravated. The headache is located by him in the left parietal and occipital regions, and the maximum point of pain seems to be at a point half-way from the parietal boss to the median line, and at this spot a small scar can be seen, and there can be felt a slight irregularity of the surface of the skull, suggestive of a fracture. The pain from which he suffered, though continuous, was subject to exacerbations. In connection with the sudden increase of pain, the boy would develop a maniacal condition, in which his actions were extravagant, his speech abusive and profane, and in which he at times indulged in acts of violence toward his family and employers. In consequence of these attacks, which occurred every few days, or, when under treatment by bromids, every three or four weeks, he was unable to keep up with his classes at school or to pursue any steady employment.

He was not particularly bright or intelligent, though he could not be said in any sense to be demented. Between the attacks he had no clear recollection of what had occurred during the attack, and on several occasions he had lost consciousness; he had never had any convulsions.

It is an interesting fact that this boy recovered after trephining, the operation being performed for Professor Starr by Dr. A. J. McCosh.

The second case, of which a mere outline is quoted from Dr. Starr's copious and valuable notes, is that of W. V. D.:

His father was intemperate and ungovernable. His paternal grandmother and two greatuncles on his father's mother's side were insane. His mother is insane. His father had an epileptic cousin. His mother's father was paralytic and nervous, and one greatuncle was intemperate, and one member of his mother's family had migraine. At the age of three years the patient had screaming attacks and hallucinations of visions (seeing faces). Though very bright, he was ungovernable and and contrary. At seven he had attacks of running about and of laughing, sighing deeply afterward. Between the ages of seven and a-half and nine and a-half he had no attacks, under bromide treatment. At nine he was circumcised. At eleven he had hallucinations of visions—shapes and figures—together with attacks of fear, for one month. At twelve he had laughing attacks at night, making loud blowing sounds. During the following year he had over 1100 attacks of singing, laughing, crying, etc. The bromids being then withdrawn, he had his first convulsion, and ninety convulsions were counted during the subsequent fifteen months. He was conscious of the running attacks, but not of the singing, or laughing, or crying, nor of the convulsions. He has become insane. This case, up to the age of about twelve years, was a case of pure psychical epilepsy.

Attacks of psychical epilepsy are of vast medico-legal importance. Epilepsy is common among the criminal class, and the lower type of epileptic is cunning, deceitful, treacherous, and bold. Egotistic and irritable, he often carries resentment against someone. A mere grudge, in the interparoxysmal periods, becomes the basis of a homicidal attack or other criminal act during an epileptic seizure. Bevan Lewis[1] calls attention to the fact that leading ideas, delusional or otherwise, prevailing in the preparoxysmal stage, are likely to become operative in conditions of post-epileptic automatism and during psychic equivalents. It is a hard task to decide whether an epileptic is accountable and should be punished for crimes committed during a psychical manifestation, equivalent or post-epileptic. The discovery of motive in an interparoxysmal complaint or threat is not enough to satisfy one of the responsibility of the patient for crime committed during an attack. The alienist knows that the epileptic will perform, automatically, complex acts that have the very appearance of deliberate volition. He knows that the patient, under circumstances, is really irresponsible.

A just disposal will be made of these criminals and of the malingerers for whom their legal advocates enter a plea of transient insanity due to epilepsy, when they are promptly confined in a hospital under the eye of a competent alienist, that their interparoxysmal mental state may be studied, and the preparoxysmal and post-paroxysmal stages of subsequent attacks may be observed. Study of the intervallary period will generally prove barren of result; rarely will it afford us

[1] "Epileptic Insanity," *Am. Journ. of Insanity*, vol. lii, No. 4, p. 528.

[2] *Am. Journ. of the Med. Sci.*, November, 1894.

[1] "A Text-book of Mental Diseases," London, 1889, p. 234.

evidence of a mind governed by delusions. Study of the conditions immediately antecedent and subsequent to the attacks will give us evidence as to the presence of genuine automatism, of uncontrollable impulse, of blind fury operating during reductions in consciousness.

CLINICAL MEMORANDA.

MOTOR AND SENSORY APHASIA OF SEVEN YEARS' DURATION, DUE TO PROBABLE THROMBOSIS FOLLOWED BY ANGIOMA; OPERATION; RELIEF OF PAIN; SLIGHT IMPROVEMENT IN SPEECH.

By J. T. ESKRIDGE, M.D.,
AND
CLAYTON PARKHILL, M.D.,
OF DENVER, COL.

THE following case seems to indicate that the usefulness of cerebral surgery may be further extended.

James S., aged forty-five, single, born in Ireland, a miner by occupation, has been living in Colorado nearly twenty years.[1] Seventeen years ago, while blasting in a mine, he was injured by a flying piece of rock. The right hand and left knee were severely cut and bruised, and the skull was crushed in just above the left eye. He recovered from the immediate effects of the accident, but has suffered from headache in the left frontal region from that time up to the present. Ten years after the injury, he suddenly lost his speech. It is impossible to learn from his history whether he has indulged in alcohol to excess or has ever contracted syphilis. Of the circumstances attending the onset of his loss of speech, I can find out nothing. Three years later, or four years ago, he was adjudged insane and sent to the Colorado State Insane Asylum. During his stay there his speech has been confined to "yes" and "no," which he does not always use correctly, and a few profane words.

On January 27, 1896, during an official visit at the State Asylum for the Insane, through the courtesy of Dr. Thombs, the superintendent, I was permitted to make a thorough examination of the patient.

The gait is good and no ataxic symptoms are observed. All the leg muscles are strong. Dyn. R., 200; L., 232. The right wrist had the tendons severed in front during the mine accident, and this hand is now much cooler than the left one. There is no paralysis of the facial mucles, and the tongue is protruded in the median line. Knee-jerks, R., about normal; L., a little lessened. Ankle-clonus absent. Tendo-achillis, R., slight; L., absent. Deep reflexes of the arms are all increased, the right more than the left. Masseters absent. Sensation: All general sensory phenomena are normal on the left side. Right side, tactile sense lessened throughout this entire side of the body, but least in trunk, thigh, and upper arm, most decided over foot, hand, and face. Localization and muscular sensation lessened. Temperature, pain, posture, and joint sensations, so far as I am able to determine, are nearly normal. Hearing: Watch, R., not at all; L., on contact. Tuning-fork heard with both ears, but it is impossible to determine in which one it is heard most distinctly. Smell present and equal on each side. Taste, he can recognize salt only on the left side of the tongue. Eyes: Central vision, fields, disks, fundi, internal, and external muscles are normal. His memory is good. He often feels dizzy, and at times has a tendency to fall backward. He has a constant numb sensation on the right side of the body, but he experiences no pain. He frequently feels confused, especially when he is trying to concentrate his mind on any subject. He has no delusions and shows no evidence of insanity. He is a strong and vigorous man, enjoys the liberties of the place, and is almost constantly employed in doing chores around the Asylum. He complains a great deal of headache in the left frontal region of the head.

Aphasia.—He recognizes objects and their uses when presented to him through any of the senses on the left side, and through all the senses on the right side, except that of hearing. Considerable time is consumed in testing his power to recognize objects with the right ear. He recognizes a watch, bell, or coins when heard by the left ear. He can hear a loud ticking watch with the right ear, but the sound of a watch, of a bell, or of jingling coins, when heard by this ear alone, apparently conveys to his mind no distinct meaning other than that of noise. He readily recalls the spoken names of objects presented to him through all the senses, except that of hearing on the right side. Sometimes he seems to recall the spoken name of an object heard by the right ear, and at other times he does not. His answers have to be taken with caution, as he says "yes" sometimes when he means "no," and when he becomes fatigued he is nervous and excitable. He seems to understand speech and music on first testing for this power, but it is found that he appreciates fully only the commoner things that are spoken to him. Some things have to be repeated several times before he seems to understand them. If one talks to him in an ordinary conversational style he becomes confused. He has no difficulty in recognizing his own name when it is spoken, or a word when it is spelled aloud. It is impossible to get him to understand what is wanted when I endeavor to test his power to call up mentally the sound of a note, figure, letter, or word. In testing his power to recognize notes, figures, letters, words, or colors seen, it is found that he can do so only for a few. He soon gets confused. He can read nothing aloud, and it is doubtful whether he can read inaudibly so as to understand what he reads, except a few familiar words, *e.g.*, Asylum, Dr. Thombs, Pueblo, etc. He recalls a few familiar objects, the names of which are seen. He does not seem to be able to write voluntarily, nor at dictation. He copies fairly well, both printing and writing, but does so mechanically. He cannot write the name of any object presented to him through any of the senses. He does not understand what he has copied, except when he has copied some familiar words. He cannot be induced to

[1] I am unable, on account of the patient's aphasic condition, to learn anything of his family history, and only a few items can be ascertained concerning his personal history.

try to write his own name, but he reads and understands it when written by another. He does not recognize a letter when his index-finger is made to trace it. It is impossible to determine whether he can call up mentally the appearance of an object, figure, note, letter, or word. He cannot speak voluntarily. His entire vocabulary is limited to "yes," "no," "G— d—d." These words are used automatically, or simply reflexly. He can, however, usually manage to say "yes" or "no" voluntarily when requested to do so. At times he can voluntarily utter his profane expression, but at other times he cannot. The patient cannot propositionize. He understands and uses gesture expression. He can read figures inaudibly, and apparently understands the value of most figures taken separately. He shows no evidence of understanding most numbers above ten. He can add two numbers, but cannot subtract, etc. He seems to recognize money, but it is doubtful whether he appreciates the value of each denomination. He can play cards and other games.

Diagnosis.—The first question to decide was the connection of the injury to the head, which occurred seventeen years ago, with the aphasia, which followed ten years subsequently. Immediately above the left superciliary ridge, there is an old cicatrix, and beneath this, the bone is depressed to a depth of about one-quarter of an inch. The headache of which he complains dates from the time of the injury to the head. As the aphasia did not occur until ten years after the receipt of the blow to the head, it is believed that there is no direct connection between the former and the latter. It is thought, however, that the head injury may have caused a local pachymeningitis, and that this may have extended backward and produced some changes in the cortical branches of the middle cerebral artery. It is thought that the immediate cause of the aphasia was a thrombotic occlusion of cortical branches of the left middle cerebral artery. The aphasia is distinctly motor and sensory in character. The motor aphasia is nearly absolute, the sensory partial. There is no distinct word deafness or mind blindness, but a partial apraxia and mental enfeeblement, as shown by his mistakes in the use of some objects, and his inability to concentrate his mind without becoming confused and exhausted. The existence of the complete motor aphasia prevents a satisfactory test being made of the sensory.

The next question to decide was whether any surgical operation would likely be followed by benefit to the patient. Dr. Clayton Parkhill of Denver, one of the consulting surgeons to the Asylum, was visiting Pueblo at the time of the examination. He was requested to see the patient with me. He was of the opinion that the depressed fragment of bone should be elevated, as this might relieve his headache, but in regard to further surgical procedure, he declined to express an opinion, preferring to be guided by the results of my examination.

After studying the case carefully, I became firmly convinced that there was no direct connection between the old head injury and the aphasia. The cortical area involved by the lesion in the left hemisphere seems to be extensive, and is supplied by the first part of the second, and the fourth cortical branches of the left middle cerebral artery. The main lesion was at the point of the bifurcation of the Sylvian fissure. In view of the marked improvement following excision of the degenerated orolingual center, in a patient operated upon for me by Dr. Edmund J. A. Rogers, at the Arapahoe County Hospital, some two and a half months before the time set for this operation, I decided to recommend excision of the cortical surface of Broca's center in this case.[1]

REMARKS UPON THE OPERATION AND SURGICAL ASPECT OF THE CASE.

BY DR. PARKHILL.

Operation, March 1, 1896, 10 A.M.: On elevating the depressed fragment of bone above the left orbit, it was found that the left frontal sinus only had been involved in the injury. The anterior wall had been crushed in, while the posterior was intact. The depressed bone was removed and the sinus scraped out and packed. The measurement on the scalp were then transferred to the bone. A semi-circular flap was raised, with its base downward, and a half inch button of bone removed from over Broca's convolution. The opening was enlarged until it had a diameter of about two and a half inches. The dura was found to be normal. On opening it, however, and reflecting it, an arterio-venous aneurism of the pia was at once preceptible. As might be expected in such a condition, the veins predominated, giving to the surface of the brain a bluish tinge. Pulsation was very faint. The greatest change in the vessels was found over the speech center of Broca, and extended upward and backward in the direction of the horizontal branch of the fissure of Sylvius. The dilated vessels were secured above and below by means of numerous catgut ligatures, and the intervening portion was excised. It was believed inadvisable to enlarge the opening in the bone further in an attempt to remove all of these dilated vessels, as it would make the operation so extensive as to be hazardous to the patient's life. The cortical substance in the region from which the angioma had been removed seemed soft and degenerated, and a considerable portion of this was excised. During the operation there was considerable capillary hemorrhage, which was fairly satisfactory controlled by gauze pressure. Inasmuch, as there was not absolute hemastasis, a small rubber drainage-tube was introduced, the dura sutured around it by catgut, and it was brought out through an opening in the scalp flap. The scalp was sutured with silkworm-gut, and the ordinary dressing for these cases was applied. The patient rallied well from the operation, and showed very little evidence of shock.

On April 24th, Dr. R. W. Corwin of Pueblo, elevated the scalp flap and inserted a disk of gold foil between it and the dura. From this, the patient made an uneventful recovery.

MICROSCOPICAL REPORT.

BY DR. E. R. AXTELL.

In the specimen submitted for examination was found a mass which was very soft and pulpy, and which, when

[1] MEDICAL NEWS, August 15, 1896, p. 176.

examined, was found to be composed of dilated blood-vessels having walls which resembled small veins and arteries. A few of the vessels looked like new formed vessels, but most of them seemed to be preëxisting blood-vessels, dilated. Along with this dilatation, there is an increase in the amount of connective tissue. The vessels present a general tubular outline, but show fusiform and sacculated dilatations. Pathologic diagnosis is simple angioma.

FURTHER NOTES ON THE CASE, WITH REMARKS.

By Dr. ESKRIDGE.

The patient was able to be up on the eighth or tenth day after the operation, and at the end of the third week it was observed that he had added to his vocabulary four words: "cold," "snow," and "good morning." He had never been known, since he had been in the asylum, to use the expression "good morning," until about three weeks after the operation, when on meeting the superintendent one morning, and being accosted "Good morning, Jim," he replied "good morning." The words "snow" and "cold" had not been uttered by him before. These words apparently were not uttered entirely voluntarily, as he could not repeat them on being requested to do so. He did not recover his general health very rapidly after the operation, and in consequence the gold foil was not inserted between the scalp and dura until the latter part of April. His headache has been relieved by the operation, and the superintendent of the asylum, Dr. Thombs, says that the patient seems brighter than he has at any time during the previous four years.

On my visiting the asylum, April 29th, a few days after Dr. Corwin had inserted the gold foil, I found the patient in bed, but cheerful and free from pain. At that time, his speech did not seem much better than it did before the operation, but as the wound had been so recently reopened for inserting the gold foil, it could not be expected that if he had made any improvement in speech it would be manifest then, and besides I made no thorough examination to test his speech.

May we hope to benefit old aphasics whose lesions have been limited to the cortex by surgical measures? If so, what is the explanation of favorable results following surgical procedures? It is probable that a degenerated cortex, from occlusion of a vessel, may act as an irritant, and give rise to headache, and exert an inhibitory influence on adjacent cerebral structures, especially on corresponding portions of the cortex in the opposite cerebral hemisphere. The greater the inflammatory condition in the cerebral substance following occlusion of a vessel, the greater the probability of headache and inhibitory influence of the lesion. Removal of the source of the irritation under such circumstances might relieve the headache. Just how much improvement of function may follow removal of the old degenerated portion of the cortex, time, with ample experience, must decide. If nothing more is accomplished by excising softened areas of the brain than the relief of persistent headache, the operation is entirely justifiable.

In regard to the angioma, I am inclined to think that while an abnormal condition of the blood-vessels, involving most of the cortical branches of the left middle cerebral artery, may have existed since birth, the pronounced dilatation of the vessels occurred subsequent to the development of the aphasia, which probably came on suddenly. His speech had been excellent before this. It would be interesting to know the state of the corresponding vessels on the opposite side of the brain.

Further report of this case will be made in about a year.

FORMALIN IN THE TREATMENT OF PURULENT OPHTHALMIA.

By E. OLIVER BELT, M.D.,
OF WASHINGTON, D. C.

THE following case is of interest, not only in showing the value of formalin in promptly arresting ulceration of the cornea, but also in its remarkable effect upon a large prolapse of the iris, which was reduced, and a round mobile pupil obtained *without anterior synechia*.

On March 13, 1896, I was called in consultation with Dr. W. Sinclair Bowen, to see M. C., a boy of fifteen years, suffering with purulent ophthalmia (specific) of both eyes. The right eye had been affected six days, and was in a very serious condition with only light perception. There was great chemosis of the conjunctiva, a large protrusion of the iris through the lower quadrant of the cornea, and the entire cornea was cloudy. There had been a purulent discharge from the left eye for two days, but the cornea was still clear, and there was no chemosis. The treatment had been nitrate of silver solution, two per cent., once a day. Boracic acid solution hourly when the eyes were bathed freely with hot water. To this was added, for the right eye, free scarification of the conjunctiva daily, and atropin sol. Bichlorid solution, 1–4000, was substituted for the boracic acid. However, both eyes got worse, and in a few days there was considerable chemosis in the left eye. Ice compresses were then used on the left eye, but in two days the cornea became cloudy, and was soon sloughing at the lower segment. At this time, Dr. Burnett suggested the use of formalin, and a solution of 1–1500 was ordered every hour instead of the bichlorid solution. Eserin had been substituted for the atropin the day before. Once a day the sloughing cornea of each eye was touched with formalin solution, 1–60. The second day, the slough had disappeared from the left cornea, leaving a clear ulcer. On the third day, there was considerable improvement in the right eye, and the chemosis was disappearing in both. In ten days, the left cornea was clear, no chemosis, and very little discharge. The prolapse of the iris in the right eye had shrunken greatly. In one month, the left eye was normal, V. $\frac{20}{10}$, with no clouding of the cornea. There was no sign of hernia of the iris in the right eye, except some pigmentation of the cornea, where the iris had been incarcerated. There was no adhesion of the iris to the corneal wound. The iris had resumed its normal position with a circular pupil. Though not transparent, the clouding of the cornea was not dense, and he could count fingers at six inches. From the constant progress of the

disease until formalin was used, and its rapid subsidence immediately following, I am quite convinced that the eyes would have been lost but for its use. I believe formalin is especially valuable in arresting corneal ulceration, and in lessening corneal opacity.

MEDICAL PROGRESS.

Varicella of the Larynx.—M. MARFAN and J. HALLE (*Revue mens. des malad. de l'enfance*, 1896, Januar). One of the rarest diseases to come under the observation of the clinician, is varicella of the larynx. The authors describe two cases, which came under their care, as follows:

The first case was a boy of three years of age. He was suddenly seized with great difficulty of breathing and fits of suffocation. Inspection of the oral cavity, together with a bacteriological examination, gave no evidence of diphtheria. On account of the cyanosis, tracheotomy was performed. There was no membrane. After an injection of antitoxin, the typical eruption of varicella appeared on the forehead, neck, cheeks, abdomen, and back. The same eruption appeared on the body of a younger brother of the patient. After a little while the breathing became normal and recovery supervened.

The second case was a child of nine months. The typical eruption was distributed over the greater surface of the body. There was marked stridor and difficulty of breathing. Examination as to the presence of diphtheria was negative. Nevertheless, an injection of 20 c.c. of antitoxin was given. Broncho-pneumonia and copious diarrhea followed, and death was not long delayed. The *post-mortem* examination revealed a circular shallow ulceration on the posterior part of the right vocal cord, about the size of a pea (a burst varicella vesicle). The prognosis of laryngeal varicella is extremely dubious. As yet, statistics furnish but one recovery. Treatment consists in either intubation or tracheotomy. Stenosis of the larynx in varicella may at times be confounded with diphtheria. A bacteriological examination will serve to distinguish the two.

Latent and Masked Tuberculosis. — In the *Berliner klinische Wochenschrift*, 1896, Nos. 19, 20, and 21, PROFESSOR E. MARAGLIANO speaks of latent tuberculosis as that condition in which, notwithstanding the tissue changes due to the invasion of the tubercle bacillus are progressing, we yet fail to elicit any symptoms which might reveal their presence. In these cases, the intercurrence of any depressing factor, such as pregnancy, a slight disorder, mental depression, insufficient nutrition, is generally sufficient to convert this latent process into a process which mostly passes for one of spontaneous activity. Frequently, such general symptoms as fever, wasting, etc., are present, though the most careful examination fails to detect any local physical changes. Clinically, two types—the dystrophic and the typhoid are recognized. In the dystrophic type, the progressive wasting, anemia, loss of appetite, and cessation of the menses, show a marked disturbance of the functions of nutrition. The prominent symptom of the typhoid form is fever. This may be either remittent or intermittent and, at times, so high as to suggest the existence of typhoid fever. The not infrequent coexistence in these cases of splenic enlargement and an exanthema may lead to an error of diagnosis. The frequent unavailability of the physical and microscopic methods of examination, renders the diagnosis of the latent and "masked" types of tuberculosis, at times, very difficult. An available method in these cases may be found in determining the toxicity of the blood-serum. The injection of a few centimeters of blood-serum, in which the toxic products of the tubercle-bacilli are present, will suffice to kill a rabbit. A still more practical method consists in the characteristic reaction obtained by the injection of tuberculin.

Resection of the Fifth Costal Cartilage as a Preliminary Step to Incision of the Pericardium. — DURAND, in the *Rev. de Chirurgie*, June, 1896, urges the advantage of resection of the fifth costal cartilage before opening the pericardium. He holds that it is assuming an unwarrantable risk to plunge a trocar blindly through the intercostal space, without knowing if the pleural cavity is traversed or not. Moreover, resection of the cartilage gives an opportunity for free drainage of the pericardium. The operation can be readily performed under cocain. The incision is made over the cartilage from the sternum outward. The cartilage is bared, divided at the sternocostal joint, lifted and divided at its junction with the rib. The perichondrium is removed with the cartilage. The reflection of the pleura is next observed and avoided, and the pericardium opened as widely as the case demands. It may be necessary to remove the margin of the sternum with a rongeur to reach the uncovered pericardium.

THERAPEUTIC NOTES.

Diverticulum of the Gall-bladder.— STAUB mentions a case of a diverticulum of the gall-bladder caused by a calculus. The diverticulum was above, and simulated the gall-bladder, while the bladder situated below might well have been taken for a floating kidney. A cholecystotomy resulted in a complete cure.

Treatment of Spinal Meningitis with Hot Baths.—J. WOROSCHILSKY (*Therap. Monatsch.*, February, 1895). At the suggestion of Aufrecht, the author treated two severe cases of spinal meningitis, in which the other methods, including the calomel treatment, had failed, with hot baths.

In both cases good results followed.

A warm bath (103° F.) was given every day of ten minutes' duration.

In the one case, after eight days of this treatment, a marked improvement was noted.

In the other case, complete recovery took place after the fifteenth bath.

THE MEDICAL NEWS.

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OF MEDICAL SCIENCE.

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SATURDAY, SEPTEMBER 5, 1896.

CREOSOTE IN TUBERCULOSIS, BURLUREAUX METHOD.

THE use of creosote in pulmonary and other forms of tuberculosis has an ardent supporter in Burlureaux, *Gazette Heb. de Med. et Chir.*, July 19, 1896, who asserts that the intolerance of the organism for this drug is a reliable indication of tubercular degeneration. The case is stated by him in three aphorisms. (1) Every patient who does not tolerate very small doses of creosote is almost surely beyond hope. (2) Every patient who bears creosote well in large doses has excellent chance of recovery. (3) If a patient has borne large doses of creosote well, and later becomes unable to do so, the prognosis is rendered thereby a most serious one.

Burlureaux rejects stomachic and rectal methods of administration of creosote, because he believes that a surer effect and a larger dose accompany its subcutaneous use. For this purpose the ordinary creosote of commerce is redistilled at 207° C. (404½° F.). This gives a creosote pure, except that it contains from eighteen to twenty per cent. of guaiacol, which is not objected to. The creosote is then mixed with from fourteen to twenty parts of sterilized olive oil, and is injected *subcutaneously* if the dose is large—*into a muscle* if only a small amount is required. A child from one to five years old should receive ℥ 1 to ℥ 7 daily; an adult ℥ 15 to ʒ 1, or even as high as ʒ 4. These amounts are of the creosote, not of the mixture.

There is usually no immediate effect of the injection if the oil is forced slowly into the tissues. In a small percentage of patients (one per cent. in males, ten per cent. in females) considerable pain is experienced. A blood-vessel is naturally to be avoided.

Sometimes pain begins soon after the injection and lasts from two to three or even five hours. Within a few minutes the odor of creosote is noticeable in the breath, and the patient perceives its taste. The urine may also be discolored, and this discoloration is an index of the prognosis—if slight, the prognosis is good; if marked and invariably present, the case is wellnigh a hopeless one. Perspiration after injection is another unfavorable sign; but the worst symptom of all is a subnormal temperature, with chilly sensations appearing about seven hours after injection, especially if long-continued. The temperature may sink even to 95°. This symptom is a contra-indication for the use of creosote, or at least its use in large amount.

Burlureaux has treated in the manner described 262 cases, over two hundred of whom were much improved in health as a result of the creosote.

THE SANITARY CONDITION OF MEDICAL SCHOOLS.

PERHAPS the public thinks, if it thinks at all, a medical school is a most sanitary institution. But probably no more conspicuous example of inconsistency, of failure to put into practice what the faculty is daily teaching in reference to hygiene, exists than is to be found in the amphitheater of the average medical school. In most institutions smoking and spitting on the floor is not only allowed, but it is actually expected. The vulgar applause with which the students greet the arrival of a favorite professor stirs up clouds of dust, which rise from the filthy floor and float in the atmosphere for hours, till it has been inhaled and reinhaled by the heedless students. In

a great many medical schools a large number of the students fall victims every year to these unsanitary surroundings. In some schools the percentage of students annually attacked with tuberculosis has been as high as three or four per cent. In the graduating class of the college with which the writer is associated four men out of fifty acquired tuberculosis during their course, and one of these will probably not live out the first year of his practice.

It has been frequently remarked that students who leave college and take positions immediately as hospital internes are very liable to show signs of tuberculosis before they finish their hospital service. Considering the usually vigorous class of young men who make up the body of medical students, this is entirely too great a ratio, and speaks loudly against the continuance of the unsanitary condition of the lecture-rooms. The amphitheater is particularly liable to neglect. On account of the arrangement of the chairs and their backs, the floor is invisible. A decent appearance is presented to the faculty when the arena alone is clean. Long hours, bad air, imperfect heating, and constant inspiration of tubercular dust has been the ruin of many bright young medical students, some stricken down during their college course, others at the end of it, and still others succumbing during the immediately succeeding years. Is it not due to the preservation of our professional self-respect that our medical schools be thoroughly investigated and during the present vacation put in the most sanitary condition possible, and that such rules and regulations be made and such changes undertaken as will secure hereafter not only a decent and dignified audience-room, but one which shall not endanger the lives of students and teachers?

THE CAMERA IN THE DETECTION OF CRIME.

THE vogue of the Röntgen ray and the skiagraph continues. The great Li Hung Chang is said to have been comforted, and to bear with equanimity his historic loss of the yellow jacket and the peacock feather, now that he has found, by means of the "X-ray," the Japanese bullet he carries in his head. But in spite of the vogue of the new imponderable, the photographic camera continues to add to its achievements and to offer enlarged possibilities to the student of medical jurisprudence. The camera reproduces differences that the human eye cannot perceive, and frequently represents objects with a wrong distribution of light and shade, because there are colors which are not visible, but which possess actinic power.

The experiment, familiar to some, of photographing a practically invisible drawing made with a solution of sulphate of quinin in water, and getting a clear, sharp result in the photograph, owes its success to the fact that quinin has the power of converting the violet, ultra-violet, and blue rays into rays of less refraction. Treatment of surfaces to be photographed with substances having powers similar to the power of quinin, and the employment of various sensitizers in gelatin emulsion put within our reach, results which, a generation ago, would have been deemed magical.

From the *Tägliche Rundschau* we learn of a practical use of photography in the detection of crime that is novel and ingenious. The murder of a woman was traced to one of two men—her husband and a neighbor. Each had hairs upon his clothes. Dr. Jeserich, "the inventor of criminal photography," photographed the clothes of the suspected men, and the camera disclosed the fact that the hairs on the husband's clothes were from his wife's head, while the other prisoner had hairs from his own head on his clothing. The same scientist has shown that the differences in inks used in writing and in altering a document can be shown clearly in a photograph of the document. Even on surfaces from which, to the eye, all trace of writing has been erased, the camera reveals legible characters; and the forger or thief fails of his purpose of irrevocably destroying the original purport of the document with which he tampers. Were all possible agencies known to science used by scientists in the detection of crime, these would be "troublous times" for malefactors.

ECHOES AND NEWS.

Illinois Licenses Midwives.—The Illinois State Board of Health at its meeting in July, passed a resolution allowing midwives to practise in Chicago. Applicants will have to submit to a thorough examination and give satis-

factory proof that they are capable of doing their duty, and file a bond with the Board.

A New University Building.—The University of Pennsylvania is erecting a building for the department of dentistry, to cost $120,000.

Medical Journalism in Paris.—According to the *Annuaire de la Presse*, the number of medical journals published in Paris has fallen from 191 in 1895 to 175 in 1896.

American Public Health Association.—The twenty-fourth annual meeting of the American Public Health Association will be held at Buffalo, N. Y., September 15th, 16th, 17th, and 18th.

Typhoid Fever in New Haven.—Upward of seventy cases of typhoid fever have now been reported in New Haven. All of these are believed to be traceable to the milk delivered by one dealer.

An Endowment Fund for the Royal Victoria Hospital.—Lord Mount Stephen and Sir Donald Smith have given $800,000 to form an endowment fund for the Royal Victoria Hospital, Montreal.

Typhoid Fever in Chicago.—Typhoid is reported to be again on the increase. No particular locality seems to suffer in excess of others, but the disease is gaining a a general hold on the city.

A Texas Donation.—The University of Texas has received $30,000 from Col. W. C. Breckinridge of San Antonio, to be used in building a refectory and dormitory for the women medical students.

Indianapolis to Try Sand Filtration.—The recommendation of the Board of Health of Indianapolis that intermittent sand filtration be introduced into their water system has been approved. The filtration of 2,500,000 gallons per acre has been adopted as the limit.

The First Women Doctors from Edinburgh.—Miss Jessie Macgregor and Miss Mona Geddes, of Edinburgh, were two of the 151 medical graduates from Edinburgh University in the class of 1896. They are the first women to take medical degrees from that institution.

Sewage-Farms in Paris.—One-fifth of Paris sewage is used to irrigate waste lands. The municipal council acquired a tract of 2000 acres of arid, sandy soil in the forest of Saint Germain, two years ago, and irrigated it with sewage. It is now bearing luxuriant crops.

Dr. MacDonald's Successor.—Dr. Carlos F. MacDonald has resigned the presidency of the New York State Lunacy Commission and Dr. Peter M. Wise has been appointed his successor, the appointment to take effect October 1. Dr. MacDonald, whose term would expire by limitation in May, 1901, will resume private practice.

Sponges as Septic Agents.—Professor Lang of Vienna, in a recent work, "Hygienic Hints," declares that sponges, on account of the impossibility of destroying the bacteria in them, have long since been banished from the operating-table, and that their exclusion from the bathroom and washstand should follow.

A Lucid Definition.—A recent German writer in a work recording observations on psychic phenomena in animals, including man, concludes that soul or spirit is a force emanating from the nervous system, stimulated and modified by the physical organism under the manifold influences of the outer world.

The English Stage-Stabbing.—The inquiry into the death of the actor who was stabbed to death recently, at a London theater, by a too realistic villain, showed that the dagger pierced the front border of the lung, the pericardium, and aorta. In spite of the mortal nature of his injury, the wounded man was able to answer a question and allowed the curtain to be raised.

The Philadelphia Polyclinic.—The annual catalogue announces that the faculty of the school has been increased and its facilities enlarged, especially in its laboratory equipment. An excellent Röntgen apparatus has been provided for daily use in diagnosis and study. Nearly sixteen thousand new cases were treated at its dispensary last year, and over five hundred major operations were performed.

Tesla's Theory of the Roentgen Rays.—An exhaustive study of this new form of electric force, causes Mr. Nikola Tesla to reaffirm his belief that the rays consist of streams of minute material particles projected with great velocity. In this idea Mr. Tesla stands alone, as most authorities are agreed that this influence is propagated by means of vibrations in an imponderable ether.

Anesthetics in Great Britain.—The latest report on chloroform as an anesthetic by the *Lancet's* board of investigation seems likely to lead to the rapid introduction of a combination of nitrous oxid with ether. British surgeons have objected to ether, principally on account of its slowness of operation and the distress it causes many patients; but these difficulties have been overcome by the preliminary use of the nitrous oxid.

An Argument Against Pessimism.—Mr. Wilfred Ward, in an account of conversations with Huxley contributed to the *Nineteenth Century*, quotes him as having said: "One thing which weighs with me against pessimism and tells for a benevolent Author of the universe is my enjoyment of scenery and music. I do not see how they can have helped in the struggle for existence. They are gratuitous gifts."

How Best to Make Society Meetings of Personal Value.—Do not try to hear all the papers. Pick out those you are most interested in. Listen to them intently. Come forward where you can hear. Argue with yourself as to the statements made. Discuss points that you want light upon. Refute statements with which you disagree. Do not allow your neighbor to talk to you while you are listening to a paper. If your power of attention lags, get a good breath of fresh air.—*Col. Med. Journal.*

Water Supply of Cleveland, Ohio.—This water supply is drawn through an intake constructed at the expense of

several million dollars—a tunnel extending under the bed of the lake a distance of 8642 feet to a crib. Theoretically, the currents render the water about the crib safe, but storms and counter-currents running eastward, often force polluted water into the pipes. The water has been degenerating steadily. The city has concluded to make a large expenditure to lengthen the tunnel, purify the river, and erect a garbage crematory.

Sunstroke at the Seaside.—*The British Medical Journal*, after reporting a case of sunstroke in an infant, says: "This is but an example of the evil effects of a practice which can be seen in full swing at any of our seaside watering-places—little children 'paddling' with their clothes tucked up, their feet chilled and their heads exposed to the blazing sun. No doubt they enjoy it, but the danger is very great. The thickness of the child's skull and of the soft parts covering it is less than in the adult, and the fact that in some cases when recovery takes place permanent paralysis results, shows that definite local mischief is produced in the brains of patients attacked in this way.

Transmission of Insanity.—John Turner, in the *Journal of Mental Science*, gives some figures upon the frequency of hereditary insanity, based upon the study of 1039 cases observed in the Essex County Asylum. The daughters appear especially to suffer from the insanity of the parents, but the insanity of the father appears to be more often hereditary. Thus, 106 insane fathers have had 117 sons and 138 daughters affected with insanity, while 256 mothers have transmitted the insane taint to 113 sons and 182 daughters. These figures confirm Darwin's law of heredity, according to which the characteristics of the father are more often transmissible to the male line, those of the mother to the female line.

Foreign Medical Students in France.—Some over-ardent French patriots have lately started the theory that no foreign medical men should be allowed to practise in France; and further that something should be done to restrict the number of foreign medical students, who come in greater numbers each year to benefit by the superior knowledge and science of the great French doctors. It seems that 433 Russians, 217 Bulgarians, 211 Roumanians, 204 Turks, 82 Greeks, 83 Egyptians, 70 Swiss, 112 Germans, 100 Americans, 47 South Americans, 6 Japanese, and 8 Persians, are now inscribed as students in Paris, and of these, by far the greater number, join the medical schools. The foreign students, as a whole, are divided into 1489 men and 339 women.

The Size of French Families.—Francisque Sarcey, commenting in the *Cosmopolitan* on one item of the last French census, says that in France not only are large families rare exceptions, but when met with they are sure of being ridiculed rather than admired, and no theatrical joke is more certain of applause than "the appearance on the stage of an Englishman and Englishwoman followed by fourteen or fifteen children, ranged in regular gradation like steps of stairs. Fecundity is in French mothers of families a sort of blemish. When a young wife presents her husband with an heir, it is bad enough; if a second comes, she is pitied; if a third is on the way, those interested are angry, and the indifferent keep away; if a fourth—oh! if a fourth, there will be an explosion of indignation against the tyrant of a husband, of pity or of ridicule for the wife. But never fear—they are not likely to expose themselves to it. Among the middle class, and especially among the Parisian middle class, families with one or two children are the rule. There has just been founded, under the presidency of Mme. Destillon, a league, the object of which is the encouragement of large families.

SELECTION.

THE HYGIENE OF WATER SUPPLY.[1]

BY ALFRED SCHOFIELD, M.D.

WATER, when pure, is not a dubious mixture, like air, of gases in various proportions, but is, as we know, a definite chemical product, formed by the union of two volumes of hydrogen with one of oxygen, the three volumes condensing into two as the gases change to a liquid. We say "when pure," for seldom indeed is this interesting fluid composed of these two gases alone. We hear a good deal about the "adulteration of food" act; but all the adulterations of food put together, or of other beverages, are not to be compared in importance with the adulteration of water. We will prove our words further on.

Meanwhile, consider what a tricky sort of fluid this innocent compound is. In the first place, it is protean in form: it can be in turns a solid, a liquid, and a gas. But that is not all. Fluids, as a rule, expand with heat; water, however, at 32°, when heated, begins to contract in volume until 39° are reached, from which point it expands. Water just about to freeze at 32° is therefore lighter than the water 7° warmer, and hence rises to the top—one result being that ice forms on our ponds first at the top, and not at the bottom. Another painful eccentricity of water when it freezes is that, instead of contracting still more in its change from liquid to solid, it has the truly exasperating quality of expanding one-eleventh of its bulk, bringing destruction and ruin thereby into all our houses by burst pipes and boilers.

If we take water at its other extreme—that of heat—its behavior becomes positively weird. In its change from gas to water three volumes were reduced to two; in its transformation from water to vapor two volumes do not become three, as we should naturally expect, but over three thousand! It is true that while the one volume of water is incompressible, these three thousand are elastic; but this is only what we should expect. It is this mighty increase in bulk and elasticity that makes steam the mechanical power of the universe.

Steam, again, contains an immense amount of what is called latent heat, as it requires nearly one thousand times as much heat to raise boiling water into steam as to raise water from 211 to 212°. We merely mention this in

[1] Abstract of article in the *Eclectic Magazine*, taken from *Leisure Hour*.

passing, as we do many other facts, by way of remembrance, and not to reduce these pages to the level of a class-book. We emphasize this point of the latent heat of steam, however, to bring intelligent opinion to bear upon the immense superiority of steam as a disinfectant compared with hot air. Air at 213° is 213° and nothing more, and very soon gets below this; but steam at 213° has a reserve force of latent heat in the background that renders it immensely more efficacious in destroying spores, penetrating as it does into the folds of the infected articles, and gradually parting with its latent heat.

The sources whence we obtain water are mainly five in number—one from above (the rain), two from beneath (wells and springs), and two on the earth's surface (upland waters, such as lakes and reservoirs and rivers).

It is generally supposed that rain water, at any rate before it reaches the earth, is absolutely pure. Such, however, is not the case. In the first place, in England all the rain water contains on an average about two grains of salt per gallon. Then it always washes the air through which it passes, and hence, before it reaches the earth, is laden with spores and germs, and dust and particles of all sorts. Even if it were pure, it is sadly deficient in quantity; for the rainfall in England would not supply above fifty people per acre, although nearly 3700 tons of rain per annum fall on every acre. Rain water is not very palatable. If used for drinking, it should be stored in stone or slate cisterns underground, as at Gibraltar.

With regard to the surface waters, no river in England is long enough to purify itself from the sewage that falls into it. Naturally river water is extremely pure, and is much less hard than spring water, and would form a good drinking-water but for the reason given above. Nevertheless, London, as the largest city in the word dependent upon river water, draws up daily nearly one-third of the whole river Thames. Of course such water cannot be used directly, but requires the most careful filtration. The water is allowed, first of all, a week to settle in reservoirs, to give the coarser sediment time to settle, and it is then run off on to the filter-beds, which are several feet thick, and constructed of very fine sand upon the surface, with coarser sand and gravel below. The real filtering agent is the inch of fine sand, and until lately, whenever this had been used a short time, it was removed and well washed.

A most extraordinary revolution in filtration has, however, been brought about by our recent discoveries of the purifying and antiseptic powers of microbes. We knew they are the scavengers of the earth, but were slow to understand that they might with ease be pressed into our service and compelled to do our dirty work to order. A layer of mud containing millions of germs to the cubic foot is spread over the surface of the sand, and so far from being cleansed from impurities, it is never changed as long as the water will pass through. The result is wonderful. A jelly-like mass, consisting largely of living organisms, forms on the top, which is the real filter. These germs seize on and oxidize all organic matter so completely, and are themselves so incapable of penetrating the layer of sand beneath, that the water thus filtered is far purer than that passed through the purest sand. By this extraordinary means a living filter is constructed, and the bacteria are compelled to do our work just as if they were day laborers or other drudges. Of this water, Londoners consume some thirty gallons per head (being double the amount allowed in Berlin), over 120 million gallons being supplied daily for the direct use of the people.

Upland surface water is very much purer and better for drinking purposes. It is also very soft, and great cities are increasingly looking to lakes for their supplies, and, if these do not exist, are creating them as needed, often, indeed, thereby rather enhancing the beauty of the neighborhood than destroying it. Liverpool, Manchester, and Glasgow are now all supplied by this means. greatest success.

As to springs and wells, the water varies considerably. Of course, all that comes from deep sources is, as a rule, pure, but shallow wells in towns and villages are an unfailing source of disease, owing to their contamination. In cottage gardens we frequently find two holes dug—one for sewage, the other being the well; and in some cases, where the soil is porous, this is deemed a positive advantage as regards the sewage, which leaks out so quickly as to save the trouble of emptying! Where it leaks to is generally the nearest well; and it is perfectly surprising to see how bright and clear the water often is from these "sewage" wells; and not only so, but how the constitutions of the natives can resist the sewage poison for years, though drunk daily. The leakage, which may have gone on for an indefinite time, perhaps, is only discovered at last by an epidemic breaking out from some disease germs imbibed. Of course the water will not keep, and becomes very foul and muddy after rain.

Deep wells always draw their supply from beneath some impervious stratum, beyond the reach of any surface pollution, and the water often comes from a distance, where this stratum rises to the surface.

An interesting experience near Liverpool shows that the new red sandstone is not always to be trusted. A deep well was bored into it at Liverpool nearly five hundred feet, all being carefully bricked except this part in the solid rock. The result was that, there being large fissures in the rock, the shallow wells, many of them impure, for some distance round, were drained dry into this deep well. The villagers, seeing these wells of no further use as wells, utilized them as cesspools. These gradually drained, of course, also into the deep well, the water of which soon became so foul it had to be closed, a complete system of drainage provided for the district, and it was eighteen months before the water became sufficiently pure to be used.

We may sum up good and bad drinking-waters by saying that springs, deep wells, and upland surface waters are, as a rule, wholesome; that stored rain and lowland surface waters are suspicious, and that shallow well and sewage river waters are dangerous.

Just lately, again, river waters have risen in repute, for it is found, if free from actual sewage, the germs in them have an antiseptic power rather than a destructive power on the human frame, and are thus more active for good than a pure distilled water that contains nothing but hy-

drogen and oxygen. It is, indeed, only gradually that we are getting over our insensate horror of all germs, and are beginning to discriminate between good and bad.

Water may be pure and wholesome and yet not palatable. Distilled and boiled waters are instances of this, and the reason of their tastelessness is that they contain no air. They become palatable if poured over toast.

Water is called "hard" and "soft" according to the amount of lime and magnesium salts it contains, if not more than six grains per gallon, or, in other words, six degrees of hardness, it is called soft, if more, it is called hard. If the salt is carbonate of lime, it is called temporary hardness, because the salts can be deposited by boiling; if salts of magnesium, it is called permanent hardness, because boiling does not remove them. The latter is much the more injurious.

It has long since been found that for water-pipes inside a house, where so many twists and turns are requisite, there is no material so convenient, so durable, as lead. Soft water, however, flowing through lead pipes, dissolves at once a small portion of the lead, and rapidly produces symptoms of lead-poisoning in those who drink it. One-tenth of a grain per gallon is sufficient to produce them.

The purest, softest waters act most rapidly upon lead; on the other hand, if hard water is used, it forms at once a coating inside the lead-pipe, completely protecting it from entering the water. Hard water, therefore, is so largely used, not only because it is so readily attainable, but because it is such a safe water for domestic purposes. On every other ground it is a nuisance.

This protective coating of our lead-pipes gives us a hint, if we possess lead cisterns, not to have them scraped when cleaned, so as to remove this coating on the surface, but merely wiped with a soft cloth. Too much zeal in this case might readily do a great deal of harm.

Moderately hard water is not injurious for drinking, and is very palatable; but if it is very hard, and particularly if there be much permanent hardness in it, it is bad, especially for those who have any predisposition to gout.

The appearance of water is absolutely no safeguard; sewage water containing every form of organic impurity, may, as we have said, be perfectly clear, and is very often sparkling. We have also shown that among those who are accustomed to its use it may be drunk with impunity for years, and is even stated to be absolutely fattening! No water is really safe to drink unless its source be known and its purity beyond suspicion, or it be *boiled*.

There seems to be, unfortunately, a not unnatural prejudice against the use of boiled water. It is insipid and not always quite cold. Under these circumstances, the British matron is apt to fall back on the domestic filters. This is, indeed, a disastrous and dangerous error.

A filter, as a rule, is kept in the basement, and, although regularly supplied with water, at any rate when the family are at home, is seldom or never cleaned. Recent researches, unfortunately, show that, whether it be cleaned periodically or not, it is no absolute safeguard, for it has been clearly proved that all ordinary filters, after a day or two, largely increase impurities in the water. They are, indeed, germ manufactories; and water comparatively free from germs obtains innumerable organisms when passing through an ordinary or neglected filter. The idea of straining off impurities by charcoal and other powders is good enough if the water to be filtered contain any impurities coarse enough not to escape; but we may be thankful that all the water supplied to our houses has been already filtered with more thoroughness than we can do it at home. All filters should be banished from the house rather than so used as to accumulate and distribute germs.

There are perfect filters, the use of one of which has decreased the number of cases of typhoid fever in the French army over sixty per cent., and which absolutely strains off all germs. In these filters the water has to force its way through the microscopic pores of unglazed porcelain or fossil clay, which are small enough to strain off the minutest organism. Even these filters have to be placed in boiling water every other day to keep them in perfect order; but this entails very little trouble.

With regard to aerated waters, we must always remember there is no absolute safety in drinking them if they are artificially made. Natural effervescing waters, bottled at the spring, are presumably quite safe. We mention this because so many traveling abroad, and distrusting the water of Continental hotels and restaurants, take refuge in siphons, which may be quite as dangerous.

The two principal diseases conveyed by water are typhoid fever and cholera. Nearly every outbreak of typhoid fever has been traced to impure water. If nothing but boiled water were drunk by the community, it would do more to stamp out typhoid fever than any other means that can be conceived. Of course in this we include the water so frequently found mixed with milk. If we are to drink, therefore, nothing but boiled water, it means we must boil all our milk as well.

There can be no doubt that the extent to which typhoid fever still prevails in England is a disgrace, for it is not only a preventible disease, but one without any redeeming quality. It kills people quietly, in large numbers, without any sensation; therefore people are not as afraid of it as they should be.

Cholera differs from this *toto cælo*. It is undoubtedly our best sanitary inspector. Most of the drastic reforms that have been carried out in sanitation throughout Europe have been suggested by Inspector Cholera. This disease is still a terror; and so long as it continues so, it is difficult to say whether it destroys or saves the most lives. All our ports have been put in drawing-room order, under the orders of this Inspector.

Cholera is undoubtedly a water-borne disease. The classical case that inaugurated the epidemic of 1866 is well known. A man in Southampton traveled up to town and took lodgings in a house in the northeast of London, near the Lea. He there had a mild attack of cholera, with the result that the water of the river was contaminated. The water company that derived its supply from this polluted stream unfortunately happened at the time to have its filtering-beds out of order for twenty-four hours, with the result that the cholera germs were distributed widely enough to cause the deaths of 16,000 peo-

ple. Of course, if the 16,000 had boiled their water they might have escaped. It does not matter where we go, whether to India, Mecca, Hamburg—where the last outbreak left its plainly written lesson—or Marseilles, the epidemic is caused and spread by drinking dirty water.

The river at Marseilles received its cholera germs in a remarkable way. Twenty corn-mills discharged their refuse into it, the corn coming from Russia and India, where it had been trodden out and handled in cholera-stricken districts. The condition of the Holy Well at Mecca is wholly indescribable in these pages.

Perhaps, indeed, we have said too much already; and yet it is not too much if it leads every reader henceforth to forswear unboiled water, unless derived from a known and perfectly pure source.

SOCIETY PROCEEDINGS.

CANADIAN MEDICAL ASSOCIATION.

Twenty-ninth Annual Meeting, held in Montreal, August 26, 27, 28, 29, 1896.

(Specially reported for THE MEDICAL NEWS.)

FIRST DAY.

THE meeting was called to order by DR. THOS. G. RODDICK, M.P., chairman of local committee. After a short, but warm, address of welcome to the 170 delegates in attendance, Dr. Roddick resigned the chair to Dr. James Thorburn of Toronto, and the general session was opened. The visitors introduced were: Dr. Osler of Philadelphia, Dr. Cushing of Boston, Drs. G. L. Curtis and A. R. Robinson of New York, Dr. Collard of Sing Sing, Dr. J. C. Webster of Edinburgh. The first business was the calling together of the Committee on Interprovincial Registration. This large committee of twenty-seven, under Sir Jas. Grant, retired to deliberate.

The first paper presented was a discussion of

THE RELATION BETWEEN LEUKEMIA AND PSEUDO-LEUKEMIA,

by DRS. C. F. MARTIN and G. H. MATTHEWSON of Montreal. Blood observations have not fulfilled the expectations of sharp diagnosis. Anemia and pernicious anemia, tuberculosis, anorexia nervosa, sarcomata, give appearances which render diagnosis debatable. Bone-marrow and bone changes are occasionally absent; macroscopic and microscopic appearances are interchangeable. True leukemia and Hodgkins' disease the authors consider cases of increased leucocytosis; the conditions, however are uncertain and inconstant. Cases were related from the Pathological Department of Royal Victoria Hospital, in which aberrant and abnormal blood-cells only tended to confuse the diagnosis.

A preponderance of mononuclear cells or myelocytes is not trustworthy. In a case which proved to be trichinosis, sixty per cent. of eosinophiles were found. The authors consider all leucocytes of similar origin, and from microchemistry gather all into one group, if no local disease be discoverable.

The members were next taken by special electric cars to Montreal General Hospital, where a number of extremely interesting cases were shown, among the number a case of successful excision of gastric ulcer in a woman of twenty-four years. Drainage was effected through the abdominal wall. Some months after the operation a stitch worked its way out, leaving a small fistula in wall over stomach. Dr. Kirkpatrick was the operator. An interesting brain case was that of a man with fracture of the skull and serious brain hemorrhage from a bicycle accident. Dr. Shepherd trephined and removed blood-clot. Much difficulty was met with in arresting hemorrhage, but all seemed well. In four days there was recurring bleeding, which was only controlled by tying the common carotid. The wound was stuffed with iodoform gauze, and perfect recovery followed. A case of stricture of the urethra, which had gone on to malignancy, was shown. All the soft parts down to the prostate had been removed. Among the medical cases were: Progressive muscular atrophy of two years' duration, which had begun with pains in the legs; disseminated sclerosis in a man; multiple peripheral neuritis in a child of 4½ years, with great emaciation; a case of cervical rib of the left side in a woman; a case of urticaria, producible at will, had on his back "C. M. A., 1896," in honor of the visitors; several cases of scleroderma, doing well under thyroid extract; flatfoot successfully treated by Whitman's plates; an Italian navvy with true scorbutus was shown by Dr. G. G. Campbell; treatment, vegetables and lemons.

At the afternoon session, DR. MEEK, London, Ont., read a paper on

SOME CASES OF ABDOMINAL SECTION FOR CONDITIONS COMPARATIVELY RARE.

One case was a fibro-cyst of uterus; another, sarcoma of left ovary: another, volvulus from flexure of the colon in a man; all went well for ten days, then the patient died maniacal. A case of congenital absence of auditory meatus was shown.

DR. R. FERGUSON of London, Ont., read a paper on

OPHTHALMIA NEONATORUM.

Authors estimate that from ten to twenty per cent. of the blind owe their misfortune to this preventable disease. Treatment is, thorough cleansing with a quart of warm water daily, and a little silver nitrate. It was decided by the meeting to memorialize the various Boards of Health to place this malady among the notifiable diseases. In the discussion it was stated that formalin was very successful.

Dr. T. T. S. Harrison of Selkirk read a paper on

OBSERVATIONS ON THE HEREDITY OF CARCINOMA,

giving his experience in fifty-six years of practice.

One member had seen returning-cancer twenty-two years after operation.

SECOND DAY.

The first event was an explanation and illustration of X-ray apparatus and work, by DR. G. P. GIRDWOOD, in the chemical lecture-room of McGill College. Members were allowed to examine their hands, and other objects, in the fluoroscope. The fact is to be noted that the

first successful application of Röntgen skiagraphy in surgery in America was made with the instruments at McGill.

J. PRICE-BROWN discoursed on

CLERGYMAN'S SORE THROAT.

Many various conditions are given this name. There may be follicular pharyngitis, or chronic laryngitis. Nasal stenosis is often present, therefore always examine the nasal tract.

DR. GEORGE WILKINS of Montreal gave the

ADDRESS ON MEDICINE.

He referred to the great advances which had been made in medicine and surgery, and made his text "Modern Treatment as the Result of Experimentation." He paid a glowing tribute to the memory of Sir Joseph Lister, and stated that Jenner had laid the foundation of microbic pathology just one hundred years ago. The discovery of minute disease-producing organisms had furnished the link between science and therapeutics. It had upset the zymotic theory and revolutionized medicine. The introduction of serumtherapy marked a distinct epoch in the practice of medicine and gave to medicine something of the accuracy of the exact sciences.

After the morning session special cars carried the doctors to the Hotel Dieu. Here Senator SIR WILLIAM HINGSTON delivered an address on

DEBATABLE POINTS IN SURGERY,

giving his experience and preferences. He removes nose tumors by the mouth, aspirates for chest fluid, and uses trocar if pus has formed; prefers lithotrity to lithotomy, but met with a stone which resisted 250 pounds applied by lithotrite; would not operate by external opening for stricture. In cancer of breast, operate as early as possible and repeat; does not fear leaving a gland, as return is generally in the cicatrix or muscle; had operated in one case seven times and the patient was made comfortable, but died from an irrelevant disease. Sir William's work is modified by modern ideas, but he hesitates still to allow that theoretical Listerism is essential to good work. Cleanliness is very necessary, but antiseptics have no attraction for him. A tour through the wards was made. This fine hospital is under Les Religeuses, and evidences of ecclesiasticism, as crucifixes, religious paintings, candles, etc., are much *en evidence*. The wards have a medieval aspect, inasmuch as each bed is inclosed with a white curtain. An elegant repast was served.

At the afternoon session DR. JOHN STEWART of Halifax, gave the address on

SURGERY.

He apotheosized Lister and Listerism, pointing out the principles which had modified surgical practice the world over, and increased the sum of human happiness by the relief of conditions long held to be hopeless.

Honorable DR. D. MARCIL, Senator of Ste. Eustache, presented a paper in French on

THYROIDECTOMY.

This was the report of a successful case of removal of a one-sided goiter. The patient became myxedematous and was finally cured by thyroid extract. The doctor considered that in patients suffering from goiter, a peculiar diathesis existed and the gland was incapable of removing the morbid state. In the discussion, Dr. Hingston hinted that this idea would cause one to refuse to operate. Removal for cosmetic effect only is never justifiable.

DR. SHEPHERD had had several successful operations, and considered that only the cases in which the tumor could be shelled out were satisfactory for operation.

In the evening the annual banquet of the Association was held in the splendid rooms of the Windsor Hotel.

THIRD DAY.

DR. A. R. ROBINSON of New York spoke on

ETIOLOGY AND TREATMENT OF ACNE.

He believes common acne should be considered a local disease, though various inflammatory conditions of sebaceous glands and hair-follicles are included in the term; diagrammatic illustrations were given of comedones; the blackhead is rather due to chemical changes in the sebum than to foreign matter; staphylococci are generally present, therefore organisms become a factor; keratoses exist and present a strong argument for local treatment.

Treatment—Curette and empty follicles, hot water and green soap; no glycerin; acids or lemon-juice good for blackheads. Resorcin, sulphur, and salicylic acid for keratosis condition. Sublimate, if used, must be very weak. Pustules to be opened and disinfected. If boils, no matter how fat the patient, give cod-liver oil.

DR. SHEPHERD agreed as to the disease being local. He had found that the skin of patients in this country would not stand green soap.

PROFESSOR T. WESLEY MILLS and DR. S. KANE gave demonstrations of

BRAIN EXPERIMENTATION.

DR. MILLS considers the motor area almost *nil* in birds, but that it is of increasing value in the scale up to monkey and man, and centers are not equally active in all individuals. A pigeon was shown from which the entire cerebrum had been removed; it could flap the wings and fly a little. A kitten with areas for forelimbs and neck could wash its face in four days. A cat with right area removed seemed as well as ever. A rabbit, minus the motor area of both sides, was quite lively. A puppy, in same condition, scratches wound with both paws. Operations on dogs dangerous from hemorrhage.

DR. OSLER commented on the extreme importance of brain study in localizing abscess, tumors, etc.

DR. W. B. THISTLE put forth

A THEORY OF THE ELIMINATIVE TREATMENT OF TYPHOID FEVER.

It was an argument for the purgative treatment of typhoid, considering it due to toxins absorbed from the intestines. Different bacilli produce the symptoms, and they are but rarely found before nine days. Nature extrudes the toxins by the bile, the urine, the intestines, and the skin.

Treatment—Daily purges of calomel and magnesium sulphate, and salol as an internal disinfectant. Even in

comatose condition would purge, and has had good result.

DR. OSLER of Baltimore would not be rash enough to purge. He greatly feared cases where there is diarrhea.

Dr. MILLS believes that animals may digest normally without germs in the intestinal canal.

DR. G. LENOX CURTIS of New York gave a paper on

ORAL SURGERY.

He said that physicians and surgeons were generally unable or unwilling to deal with troubles in the mouth due to diseased or broken teeth, and proceeded to justify this rather strong statement by the relation of two cases which were unrelieved until they fell into the hands of an "oral" surgeon. In one case, a bad root caused the trouble; in the other, a chip of tooth.

DR. FRANK BULLER of Montreal gave demonstration of an

ARTIFICIAL NOSE-BRIDGE.

and related cases of foreign bodies in the eye in which the electromagnet had been used with success.

At the evening session,

DRS. WYATT JOHNSTON and GEORGE VILLENEUVE gave a study of

ENTOMOLOGY IN LEGAL MEDICINE.

The purpose was to establish rules to determine the length of time since death, and to compare the researches of Menien. The fauna on dead bodies agreed quite closely with that found by Menien in France, though in a different country. These gentlemen, having studied the subject in their duties as coroners' physicians, find that on a body dead three months, and exposed to the air, the animal found is the flesh-fly; from three to six months, acids develop in the flesh, and book-mites, cheese-mites, and species of dermestes may be found; from six to nine months, acari; nine to twelve months, mites. From one to three years there is but little left except ligaments, then tenebrio and attaglinus. By trial, it was found that dermestes would not lodge on a body under three months. Flies take a month to hatch out.

FOURTH DAY—MORNING SESSION.

The Committee on Intercolonial Registration reported as follows:

"Your committee beg leave to report that, having examined the present requirements of the licensing boards of the several provinces, with a view to obtaining by mutual concession a uniform standard of matriculation, education, and examination, wonld recommend the following:

"I. Matriculation.—The schedule of subjects shall comprise (1) English language, including grammar, composition, and writing from dictation; (2) arithmetic, including vulgar and decimal fractions, and the extraction of the square root; (3) algebra, to the end of the simple equations; (4) geometry, euclid, books 1, 2, and 3, with easy deductions; (5) Latin grammar, translation from specified authors, or of easy passages; (6) elementary mechanics of solids and fluids, comprising the elements of statics, dynamics, hydrostatics, and elementary chemistry; (7) history, England and Canada, with questions in modern geography; (8) and any one of the three following subjects: French, Greek, or German, the requirements being the same as in Latin.

"Fifty per cent. of the marks in every subject shall be necessary for a pass, and seventy-five per cent. for honors.

"In lieu of the above will be accepted a degree in Arts in any university in Her Majesty's Dominions, or from any college or university that may hereafter be recognized, but no matriculation in Arts in any university will be recognized.

"II. Professional Education. — The curriculum of professional studies shall begin after the passing of the matriculation examination, and shall comprise a graded course in the regular branches of four yearly sessions of not less than eight months of actual attendance on lectures in each year, the subjects to be anatomy, physiology, chemistry, materia medica, therapeutics, practical anatomy, histology, practical chemistry, pharmacy, surgery and clinical surgery, medicine and clinical medicine, including diseases of the eye, ear, throat, and nose, and mental diseases, obstetrics, diseases of women and children, medical jurisprudence, and tricology, hygiene, pathology, including bacteriology.

"That at least twenty-four months out of the graded four years, of eight months each, be required for attendance on hospital practice, to begin with the second year of study, That proof of attendance on not less than six cases of obstetrics be required.

"III. Examination—(*a*) All candidates for registration in the various provinces, in addition to having fulfilled the foregoing requirements, shall be required to undergo examination before examiners to be appointed in each of the provinces by their respective councils, or by means of assessors, as in the Province of Quebec, or by delegating their authority to one central body, as has been done in Manitoba. Each examination shall comprise all the subjects of professional study, shall be both written and oral, and fifty per cent. of the marks shall be required in every subject for a pass. (*b*) The committee make these resolutions merely as suggestions for the consideration of the councils of the several provinces as a mutual basis of agreement, and that each be requested to report thereon to the next annual meeting of the Association, and also to send one or more delegates to represent them at that meeting."

DR. RODDICK, on behalf of the Nominating Committee, made the following nominations, which were afterward unanimously approved by the Association: For president, Dr. V. H. Moore, Brockville. Vice-presidents: Prince Edward Island, James Conroy, Charlottetown; Nova Scotia, J. T. Black, Halifax; New Brunswick, T. Walker, St. John's; Quebec, J. M. Beausoliel, Montreal; Ontario, W. W. Dickson, Pembroke; Manitoba, R. S. Thornton, Deloraine; Northwest Territories, E. H. C. Rouleau, Calgary; British Columbia, Dr. Harrington, New Westminster. General secretary: F. N. G. Starr, Toronto (reelected). General treasurer: H. B. Small, Ottawa (reelected). Local secretaries: Prince Edward Island, H. D. Johnston; Nova Scotia, A. T. Mader, Halifax;

New Brunswick, G. A. B. Addy, St. John; Quebec, J. G. McCarthy, Montreal; Ontario, W. G. Anglin, Kingston; Manitoba, W. H. Smith; Northwest Territories, George Macdonald, Regina; British Columbia, A. Weld.

On the suggestion of the Nominating Committee, the city of Montreal was chosen as the next meeting place of the Association, it being thought advisable to meet there in 1897, since the British Medical Association will also assemble there during the summer of that year.

DR. J. F. W. ROSS of Toronto, gave the address on

OBSTETRICS.

He dwelt first on tumors complicating pregnancy. These are generally fibroid, and early ectrosmos is inindicated. In large fibroids, celiotomy and incision of uterus. A case was related of rupture of uterus where, after cleansing, a rope of iodoform gauze was pulled through the tear down to the vagina; patient recovered. Cæsarean section and craniotomy were equally safe for mother, but not so for child.

Dr. CUSHING of Boston, said that in case of rupture, he would turn out uterus through vagina, and plug.

PROFESSOR J. C. WEBSTER of Edinburgh, spoke of

PESSARIES IN GYNECOLOGY.

There is no disease worthy of the designation anteversion. Many women have anteflexion without knowing it. Retroversion may occur without symptoms. If there are adhesions, you cannot replace by pessary, and tender ovaries will not bear pessaries. Occasionally, a Hodge, or Thomas, or Smith, or soft rubber, may be used. Practically, pessaries may be omitted, except cups for prolapse.

DR. A. LAPTHORN SMITH of Montreal, read a paper entitled:

ONE HUNDRED CASES OF RETROVERSION OF THE UTERUS TREATED BY VENTROFIXATION AND ALEXANDER'S OPERATION, WITH SUBSEQUENT RESULTS.

Of forty-two cases of Alexander's operation thirty-nine were successful; of sixty-six cases of ventrofixation sixty-three were satisfactory. Pregnancy occurs normally after this operation.

Dr. CUSHING said he had had more experience in removing pessaries than in putting them in place; does not approve of Alexander's operation. Dr. Gardner, of Montreal, finds but little use for pessaries; has abandoned Alexander's, but likes abdominal hysterorraphy.

Meeting adjourned to Royal Victoria Hospital.

DR. JAMES BELL showed some brain cases, now well, in one the temperosphenoidal lobe had been excavated, the result of ear trouble; a boy with thrombosis of sinus, the jugular was excised; a child of six years with a bullet in the brain, a photo. by X-rays showed the foreign body two inches from the forehead; two cases of sutured patellæ with perfect movement; four elbow cases; two cases of paralysis from too tight Esmarch—the solid round rubber has been abandoned on this account; floating kidney removed; a man with calculi in both kidneys; two cases of rib excision for empyema—in one sixty-five inches of rib structure had been removed; three cases of excised hips with good motion. Among the medical cases shown by DR. JAMES STEWART were six cases of thoracic aneurism; one with tabes; a case of multiple neuritis, ataxic type, without sensory disturbances; multiple neuritis with extreme wasting of legs in a girl, caused by (?) excessive medical administration of alcohol for a previous trouble; a case of cured Raynaud's disease, with loss of all the toes and two fingers.

DR. J. E. GRAHAM, of Toronto, read a paper on

THE INFLUENCE OF MITRAL LESIONS ON THE EXISTENCE OF PULMONARY CONSUMPTION.

Statistics were given showing the rareness of the combination, especially mitral stenosis. A suggestion made was that in heart lesions greater efforts of respiration were made, and this, acting as a kind of pulmonary gymnastics, led to better development of lung tissue, a bulwark against tuberculosis.

DR. OSLER had seen acute endocarditis in patients with tubercle occasionally. Case related in which diagnosis had been confidently made of heart lesion only at autopsy proved to be acute tuberculosis.

DR. BLACKADER, at Brampton Chest Hospital, had found the combination quite rare.

DR. W. TOBIN, of Halifax, presented a paper on

MILITIA MEDICAL REORGANIZATION.

This was the outline of a scheme which it was thought the Association might urge on the Minister of Militia, so that in case of being called out, the unreadiness would not be so great as at present. It was desired to make the service departmental rather than regimental.

DR. J. B. MCCONNELL reported a case of

TETANY FOLLOWING SCARLATINA.

Eleven days after onset of fever in a child tetany occurred in ail four extremities, and lasted a week; child had had a previous attack.

DR. F. J. SHEPHERD, of Montreal, reported an

EXCISION OF A SCAPULA,

the first in Canada. The patient was a woman with a myelosarcomatous tumor which began two years previously with pain which was supposed to be rheumatism. Bone removed to neck, which was sawn through. Healing rapid and perfect movement of arms without drooping.

DR. H. L. REDDY presented the subject of

PUERPERAL INFECTION—TREATMENT BY MARMOREC'S ANTI-STREPTOCOCCIC SERUM.

Immediate improvement was manifest on use of injection, temperature fell three degrees in ten hours. Cure in twelve days.

DR. A. L. DEMARTIGNY, of Montreal, spoke of

ELECTRIC BATHS AND DYSPEPSIA.

He employs the Faradic current, and applies one electrode on the organ to be treated and the other in the water, and gets wonderfully good results in chronic dyspepsia.

DR. H. D. HAMILTON, of Montreal, reported a

NON-MALIGNANT TUMOR OF TONSIL,

and showed photo. It occurred in a man of twenty-two years, who was only aware of something wrong for two

weeks. It was two inches long and half an inch thick. Removed by electric snare, lymph adenoma.

The following papers were read by title: "Sinus Thrombosis Associated with Acute Suppurative Otitis Media in Scarlet Fever," Dr. J. W. Sterling, Montreal; "Cold Air in the Treatment of Pulmonary Tuberculosis," Dr. Edward Playter, Ottawa; "Early Atrophy of Muscles in Cerebral Disease," Dr. Frederick G. Finley, Montreal; "Treatment of Otitis Media Purulenta," Dr. A. Proudfoot, Montreal; "Technic of Vaginal Hysterectomy," Dr. L. Coyteux Prevost, Ottawa; "Actinomycosis," Dr. J. A. Springle, Montreal.

BRITISH MEDICAL ASSOCIATION.

Sixty-fourth Annual Meeting, July 28, 29, 30, 31, 1896.

(Concluded.)

SECTION ON PUBLIC MEDICINE AND HYGIENE.

G. V. POORE, M.D., F.R.C.P., Physician to University College Hospital, read a paper on

THE DISPOSAL OF DOMESTIC SLOP-WATER IN ISOLATED HOUSES.

He said that the slop-water of an isolated house must ultimately take the same course as the rain falling on the land upon which the house was built, that is, the line of natural drainage. Household slops consisted of bath-water, which was often almost clean; bedroom slops, composed of a mixture of soapy water and urine, and the waste of the kitchen and pantry sinks, which was apt to contain solid food, particles, and fat, and was very prone to become excessively foul. The flow from kitchen and pantry sinks, according to Notter and Firth, would average about four gallons per head per diem, and bedroom slops about five gallons per head per diem.

The points insisted upon were:

1. All waste-pipes should be well above ground-level.

2. All slop-water should run in open gutters, with perforated floors and good bottom-drainage, so that the water might soak away as it runs. Such gutters might with advantage be placed on low banks with sloping sides, and quick-growing shrubs, such as privet, should be planted alongside of them. These sucked up the moisture.

3. No stagnation must be permitted anywhere along a line of drainage, and, with the waste-pipes terminating in the open, no traps were necessary or advisable.

4. Slop-water should never be taken in pipes below the surface of the ground. Subsoil irrigation was a mistake.

5. The waste of the kitchen sink must be strained through a sink-basket and passed through a filter of rough stones before being allowed to flow to a gutter.

If there were sufficient ground to the house, he advocated the treatment of every variety of slops separately; and wherever the waste-waters of a house ran, there was always an increase of fertility and beauty.

DR. THRESH, Medical Officer of Health, Essex County Council, had carefully examined the sanitary arrangements referred to by Dr. Poore, and was much impressed with the apparent success. He dispensed with the sink-filter, and let the water pass through a short length of drain-pipe (to get the sewage clear of the house), and then discharge into the filtering or irrigation channel. The results had been very satisfactory.

DR. MAXWELL ROSS, Medical Officer of Health, County of Dumfries, stated that he also had had an opportunity of seeing Dr. Poore's methods in operation, and had since advocated them in his own district.

HENRY KENWOOD, M.B., D.P.H., F.C.S., spoke on

THE DISINFECTION OF ROOMS BY SULPHUROUS ACID GAS.

It is claimed, mainly on bacteriological grounds, that the process of disinfecting rooms by sulphurous acid gas is inefficient; that the SO_2 generated by the combustion of one pound of sulphur in one thousand cubic feet of space is not sufficient to kill the specific organisms of infectious disease, more especially when no measures are taken to charge the atmosphere with moisture.

He had searched most carefully for the evidence furnished during the year (1895) in a population of 254,000 people, from six sanitary areas in and around London, sulphurous acid being, in every case, the disinfectant employed. There were, in all, 1330 premises disinfected by the local authorities, 409 in respect of diphtheria and 921 in respect of scarlet fever, and 55 cases (4.1 per cent.) of either scarlet fever or diphtheria occurred on the same premises within fourteen days of their fumigation.

But the origin of much of this 4.1 per cent. may be attributed to: Infection from the preceding case; persistence of the same source of infection which accounted for the disease in the original case; the contraction of the disease away from the premises in question within the period above specified; and even the return of clothes and bedding from the disinfecting station.

Sulphurous acid is used to disinfect the walls, ceiling, floor, and bare surfaces in a room. Bedding, clothing, carpets, curtains, etc., should be removed for steam disinfection.

The method consists of two stages: (1) The charging of the atmosphere for from six to eight hours with about one per cent. of sulphurous anhydrid gas, by means of burning one pound of sulphur to every thousand feet of space in the room; (2) the thorough aeration of the room.

The second stage is an essential part of the process, in order to rid the room of SO_2. By some it has been argued that it is this thorough aeration that does the good. It is easily demonstrable that the diphtheria bacillus would be at most attenuated by such aeration, and not killed.

Mr. Walter D. Severn collaborated with him in a few bacteriological experiments, principally directed to the Klebs-Loeffler bacillus of diphtheria, for the following reasons: It is concerned in the production of one of the diseases in which the disinfecting power of SO_2 is most commonly relied upon. It is easily cultivated, its cultures are unmistakeable, and it possesses a rapidity of growth over accidental impurities in the culture media employed.

The room employed was in his own house. It was nearly square, 8 feet 8 inches in height, and had a capacity of 2004 cubic feet. Before each experiment the room was left at rest for some time, the inoculated swabs, etc., were then placed in position, and the room was treated by the man who does the disinfecting work of the parish

precisely as if there had been a case of infectious illness in it. Each experiment comprised six different tests applied at the same time at three different levels in the room —two at the level of the floor, two on a sideboard 3 feet 8 inches from the floor, and two on a bracket 6 feet 6 inches from the floor—to determine the effect produced by from six to eight hours' exposure to an atmosphere containing SO_2 not exceeding one per cent.

In the first series all three swabs and all three lints were sterile.

In the second series a serum-tube inoculated from one swab showed a late (inhibited) growth of the Klebs-Loeffler bacillus after three days, but no growth was obtained from the other two swabs or from the three lints.

In the third and fourth series no growth of *B. diphtheriæ* was obtained from any of the swabs or lints.

In Series 1 and 2 one tin of liquefied SO_2, alleged to contain twenty ounces, was employed in each case.

In Series 3 two such tubes were employed.

In Series 4 two sulphur candles were burned, each containing one pound of sulphur.

Where the diphtheria bacillus was not killed, it was very markedly inhibited, even where the SO_2 did not much exceed one-fourth per cent., and the bacillus was killed where the SO_2 exceeded one-half per cent., the above figures having sole reference to the SO_2 in the air in the center of the room at a height of four feet, and after the lapse of four hours.

SIR CHARLES CAMERON had, twenty-four years ago, made experiments on the action of dry sulphur dioxid and chlorin on vaccine lymph, and found that they only produced effects when used in large quantities; but solutions, even when used in very small quantity, destroyed the virus of vaccine. Lately he had in many cases used the spraying method, for the sake of the delay it saved.

DR. SYMONS, Medical Officer of Health, Bath, desired to know if Dr. Kenwood had met with any instance of injury resulting to subsequent occupants of the rooms. Compressed gas has many advantages over burning sulphur; but even this agent may be useless in the hands of a careless workman who overlooks any outlet. The mercuric-chlorid spray solution had not this disadvantage, and the room could be immediately occupied.

DR. GROVES, Carisbrooke, was glad this subject had been dealt with, owing to the uncertainty caused by recent criticism. If used properly and in sufficient quantity (1½ pound), sulphuric-acid gas was quite efficient. For twelve years he had not known of a recurrent case in his own district after the use of burning sulphur.

DR. F. J. ALLAN, Medical Officer of Health, Strand, was inclined to think that the influence of sulphurous-acid gas had been underestimated, especially when in the presence of moisture. They had not taken into consideration the oxidation and deoxidation which occurs.

DR. KENWOOD, in reply, stated that he knew of no cases of direct injury resulting to persons entering the room after the SO_2 had been liberated. As to Dr. Symons' question whether the control-swabs were subjected to similar conditions of light, etc., as those exposed about the room during disinfection, every care was taken to make the conditions as similar as possible. With regard to Sir C. Cameron's question whether he considered the tubes of liquefied gas more or less efficient than burning sulphur, he believed that one pound of sulphur, when completely burned, gave more sulphuric-anhydrid gas to the atmosphere than twenty ounces of liquefied sulphurous-acid gas, and that this gas was more evenly distributed throughout the room.

SIR CHARLES A. CAMERON, M.R.C.P.I., Medical Officer of Health, Dublin, reported

AN OUTBREAK OF ENTERIC FEVER DUE TO INFECTED MILK.

In May, 1896, the two daughters of the owner of a milk-shop in Meath street were ill with enteric fever. He visited the place and had the children at once removed and the milk in the shop destroyed. Fourteen persons who had been supplied with milk from this dairy were suffering from enteric fever. The cows which supplied the milk were out on pasture. The water in the dairy was pure. The milk apparently became infected from absorbing exhalations from the dejecta of the patients while being carried down the stairs to be thrown into the water-closet or ashpit. He placed some enteric dejections close to a vessel of milk, and in ten minutes found that the milk had become infected, as proved by subsequent cultivations.

JOHN C. THRESH, M.D., D.Sc., Medical Officer of Health to the County of Essex, introduced the discussion on

DIPHTHERIA IN TOWN AND COUNTRY.

He said that the county of Essex had at the present time a higher mortality from diphtheria than any other similar area in the United Kingdom, and certain districts within the county had higher rates than prevail even within the metropolitan area.

He presented statistics which showed a continuous increase, both in the urban and rural districts. Judged either by the case-rate or death-rate, diphtheria was shown to be about fifty per cent. more prevalent in the towns than in the country districts.

With reference to elevation, he found that epidemics occurred as frequently in parishes in hilly districts as in those in the valleys and near the marshes, and on the marshes dotted with farms and laborers' cottages a case of diphtheria is of exceedingly rare occurrence.

The degree of overcrowding and the diphtheria case-rate in tenements of four rooms and under exhibited a close correspondence.

The quality of the water supplies, presence or absence of drainage, the character of the soil and subsoil, seem of of themselves of trifling importance in affecting the prevalence of the disease. Epidemics may occur in the most sanitary, as well as in the most unsanitary, areas. The decreased prevalence of diphtheria in the urban rural districts in July, he suggested, was because that month exhibited fewer variations to cause cold and affections of the throat. In October, when the sudden increase occurs, the weather is more variable, there is a very marked fall in the average temperature and an increase in the relative humidity of the atmosphere—all conditions favorable to the production of the disease.

Investigations of outbreaks, in rural districts especially, give the impression that the rainfall, the fluctuations of the ground water, the temperature of the air and soil, the humidity of the atmosphere, etc., are only of importance in so far as they tend to cause congestion of the mucous membrane of the fauces and render persons so affected liable to be successfully attacked by the diphtheria bacillus should it by any means gain access thereto. To explain the innumerable instances in which an excessive prevalence of sore throat has preceded an outbreak of diphtheria, we must assume either that there has been a "progressive increase of infectivity" or that the earlier cases were not diphtheritic, and that later cases only became so upon the introduction of the specific organism. He had frequently failed to obtain the bacillus from such throats, and had found them, or organisms indistinguishable therefrom, on apparently healthy throats, and consequently his faith was shaken in the "progressive increase of infectivity" theory.

He urged that all medical officers, especially those in rural districts, should give more attention to isolated outbreaks, as they are far more worthy of study and far more likely to lead to valuable etiological conclusions than the investigation of extensive epidemics.

F. A. DIXEY, M.A., M.D., Fellow of Wadham College, Oxford, presented

VITAL STATISTICS OF DIPHTHERIA IN LONDON.

He concluded by a review of the effect of the antitoxin treatment. Comparing the average weekly number of deaths for the last five years, we find that after rising from 26.2 in 1891 to 36.2 in 1892 and 62.8 in 1893, it fell to 51.4 in 1894 and 44.5 in 1895. It is true that the opening months of 1895 promised a greater diminution than that exhibited by the figures for the whole year, and that the intensity of the rise last autumn seems to show that some other factor than the antitoxin treatment must have been concerned in the diminished mortality at the end of 1894; but notwithstanding these facts, which are freely admitted, it would seem that the general run, even of these figures, suggests a conclusion favorable to the efficacy of the treatment. This conclusion becomes strengthened if the case-mortality, or relation of deaths to notifications, is considered. Under this head the main facts are as follows: The number of cases notified during 1893 was 13,694; of deaths during the same year, 3624, giving a case-mortality of 23.8 per cent. In 1894 the corresponding figures were 11,190 and 2674; the case-mortality stood, therefore, at 23.9. In 1895, however, while the notifications rose to 11,229, the fatal cases fell to 2289, and the case-mortality was therefore only 20.4 per cent.—the lowest rate for a whole year yet recorded. The numbers for the first half of the present year are respectively 6193 cases notified and 1239 deaths, which work out to a case-mortality of 20.2 per cent. In view of the fact that, quite irrespective of the number of cases, the case-mortality of the last half of the year is invariably below that of the first, it may fairly be anticipated that by the end of 1896 the year's case-mortality will, for the first time on record, have sunk below 20 per cent. This diminution in case-mortality he could attribute to no other cause than the treatment by antitoxin.

DR. COOPER-PATTIN, Medical Officer of Health, City of Morwich, had noted the association (in his district) of diphtheria notifications with the humidity of the atmosphere. In twenty-five per cent. of the houses infected he had found evidence of persistent dampness of the walls, floors, etc. With regard to the "progressive intensity" theory, he had noticed in seven cases occurring in one house retrogression of intensity of the attack. He believed that bad sanitary conditions could be lived under, even for years, and then the accidental introduction of some new factor led to the occurrence of the disease. This new factor was to be found in the disturbance of excrement during scavenging.

PROFESSOR TREVELYAN believed that until something definite was known about the behavior of the bacillus outside the body, it would seem almost impossible to study completely the prevalence and spread of the disease.

DR. ALLAN, Medical Officer of Health, Strand District, thought that a number of cases notified as diphtheria were in reality scarlet fever; they certainly accompanied one another in a striking manner. He agreed with Dr. Thresh that unsanitary conditions act solely as predisposing influences.

GEORGE LANE MULLINS, M.A., M.D., Trinity College, Dublin, Physician to the Hospice for the Dying, Sydney, contributed a paper on

NEW SOUTH WALES AS A HEALTH RESORT FOR BRITISH CONSUMPTIVES.

GORDON SHARP, M.B.Edin., of Leeds, spoke on

THE SOIL IN RELATION TO DIPHTHERIA AND ITS ORGANISM.

His conclusions were:

1. Diphtheria would appear to be endemic in certain districts. Soils organically laden are dangerous, but much may depend on the nature of the subsoil. Where the subsoil is porous, a neighborhood may be free; where the subsoil is impervious, the surface, at certain seasons of the year, may be a favorable breeding-ground.

2. Soils which would otherwise be sources of the spread of diphtheria are rendered innocuous by deep drainage.

3. The presence of a large quantity of air in the surface soil appears to be salutary, and the contrary holds.

The close connection between enteric fever, scarlatina, and diphtheria has often been remarked, and Bond has especially called attention to the close relationship between scarlatina and diphtheria, and formerly the connection seems to have been even more marked. Thorne has called attention to the fact that as authorities have improved their water supply, enteric fever has declined in frequency, while under the same conditions and with improved sewerage systems diphtheria has increased. Immersion in water for a short time seems fatal to the microbe of diphtheria, while the contrary holds with regard to the organism of enteric fever; both seem to live in sewage. A moist, rather than a water-laden, soil seems to be the home of the organism of diphtheria.

ANNOUNCEMENT.

TRANSPORTATION ARRANGEMENTS FOR THE MEXICAN MEETING OF THE PAN-AMERICAN MEDICAL CONGRESS.

DR. H. L. E. JOHNSON, 1400 L street, N. W., Washington, D.C., has been elected chairman of the Special Committee on Transportation. All communications relative to rates, reservation in the special trains, etc., should be addressed to him. A rate of one fare for the round trip has been secured between St. Louis, New Orleans, and other trans-Mississippi points and the City of Mexico. It is confidently expected that this rate will be extended over the entire territory of the United States. Arrangements are in progress for a splendidly equipped special train of sleeping and observation cars, with first-class dining-car service. Dr. Johnson will presently be in position to announce a rate, which will include railroad fare, sleeping- and dining-car service, both ways, and in the City of Mexico, and covering the expense of various side trips to the most important historic points in the Republic.—Charles A. L. Reed, Secretary International Executive Committee.

SELECTION.

ANOTHER GLOUCESTER OBJECT-LESSON.

IN the daily press of last Saturday, which contained copious extracts from the report of the majority of the Vaccination Commission, there also appeared an item of news of singular significance in face of the conclusions at which the Commission is said to have arrived. This was a statement to the effect that on the previous day at Gloucester a public demonstration had been held by anti-vaccinationists to welcome the release from prison of a defaulter under the Acts. It is not, perhaps, so much a matter of surprise that this should happen in Gloucester, where, after a suspension of ten years, the law is now being enforced, for during this period the anti-vaccination crusade has been, as we all know, most vigorously conducted, and there must be many in that city to whom compulsory vaccination must seem a thing to be resisted to the death. But what is indeed surprising, nay more, profoundly disheartening, is the fact that those people who have suffered so much from the disease, which vaccination prevents and mitigates, should nevertheless seize the first opportunity to show that this bitter lesson has been taught them in vain. We are told that the defaulter in question was in the service of the Midland Railway Company, and that the crowd which accompanied him in his progress through the streets contained many of the employees of this company in their uniform. What makes the affair more shameful still is the notorious fact that in this recent epidemic, of the two great railway companies whose lines converge at Gloucester, the servants of the Great Western Railway Company hardly suffered at all, whereas the disease was rife among the Midland men, the fact being that the former company required their men to be re-vaccinated, while the latter declined to put any pressure upon them at all. Let us hope, for the sake of human nature, as well as our belief in the intelligence of such men, that none of those who took part in this demonstration (which, of course, may have been largely based on the personal popularity of the offender) had suffered in their own families from the visitation of smallpox. It would, indeed, be incredible if any man, whose home had been recently decimated by reason of his own perversity in failing to secure for his children protection from the plague which smote them down, could be so wilfully and grossly blinded by unreason as to continue in the delusion he hitherto held. Have the wives of such men and the mothers of those dead children no voice in the matter; and is there no sense of shame among the people of Gloucester to permit such an exhibition of heartlessness and ignorance to be made in their midst? It is said that Gloucester has been converted by its recent object-lesson, but we await for some overt sign of this "conversion" which shall prove to the world that the vast majority of its citizens no longer have part or lot with those whose baseless propaganda have been the direct cause of so much misery and death.—*London Lancet.*

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE HOSPITAL SERVICE FOR THE FIFTEEN DAYS ENDED AUGUST 15, 1896.

HUTTON, W. H. H., Surgeon. Granted leave of absence for twenty days from August 25, 1896, August 13, 1896.

SAWTELLE, H. W., Surgeon. Granted leave of absence for thirty days from August 25, 1896, August 13, 1896.

BANKS, C. E., Surgeon. To assume temporary command of the Service at Vineyard Haven, Mass., for thirty days, August 13, 1896.

BROOKS, S. D., Passed Assistant Surgeon. To assume temporary command of the Service at Cleveland, Ohio, August 8, 1896.

WOODWARD, R. M., Passed Assistant Surgeon. Granted leave of absence for thirty days from August 13, 1896, August 11, 1896.

GREENE, JOS. B., Assistant Surgeon. Granted leave of absence for twenty-three days from September 14, 1896, August 13, 1896.

CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING AUGUST 8, 1896.

August 4.—Passed assistant surgeon G. H. BARBER, detached from the "New York," ordered home and granted two months' leave.

Passed assistant surgeon V. C. B. MEANS, detached from the "Maine," and ordered to the "New York."

CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING AUGUST 15, 1896.

August 9.—Assistant Surgeon M. K. JOHNSON detached from the U.S.S. "New York" and to the Coast Survey Str. "Bache."

August 12.—Passed Assistant Surgeon G. A. LUNG ordered to the Receiving Ship "Vermont."

August 12.—Passed Assistant Surgeon E. R. STITT detached from the Receiving Ship "Vermont" and ordered home on waiting orders.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM AUGUST 4, 1896, TO AUGUST 17, 1896.

Leave of absence for one month is granted Captain William D. Crosby, Assistant Surgeon, Fort Missoula, Mont.

The leave of absence granted Major Henry McElderry, Surgeon, Fort Robinson, Neb., is extended two months.

The extension of leave of absence on account of disability granted Major Clarence Ewen, Surgeon, is further extended one month on account of disability.